

135-TRC-09-001

SAFETY COMPLIANCE TESTING FOR FMVSS 135
Passenger Car Brake Systems

Volkswagen AG Germany
2009 Volkswagen GTI, 2-Door Hatchback Coupe
NHTSA No. C95801

TRANSPORTATION RESEARCH CENTER INC.
10820 State Route 347
East Liberty, Ohio 43319



Final Report Completed: March 6, 2009

FINAL REPORT

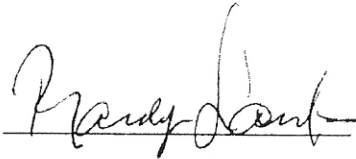
Prepared Under Contract No.: DTNH22-06-C-00033

U.S. DEPARTMENT OF TRANSPORTATION
National Highway Traffic Safety Administration
Enforcement
Office of Vehicle Safety Compliance
1200 New Jersey Avenue S.E.
West Building 4th Floor
OVSC (NVS-221)
Washington, DC 20590

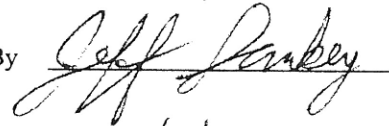
Prepared for the Department of Transportation, National Highway Traffic Safety Administration, under Contract No. DTNH22-06-C-00033.

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Prepared By



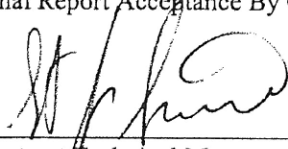
Approved By



Approval Date:

3/6/09

Final Report Acceptance By OVSC:

 3/13/09

Contract Technical Manager, Office of
Vehicle Safety Compliance

3/13/09

Acceptance Date

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		6. PERFORMING ORGANIZATION CODE: TRC 20060110/9353	
7. AUTHOR(S): Project Manager: ALAN IDA Project Engineer: RANDALL A. LANDES		8. PERFORMING ORGANIZATION REPORT NO.: TRC-DOT-135-085	
9. PERFORMING ORGANIZATION NAME AND ADDRESS: Transportation Research Center Inc. 10820 State Route 347 East Liberty, Ohio 43319		10. WORK UNIT NUMBER:	
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12. SPONSORING AGENCY NAME AND ADDRESS: U.S. Department of Transportation National Highway Traffic Safety Administration Enforcement Office of Vehicle Safety Compliance (NVS-221) 1200 New Jersey Avenue S.E. West Wing 4 th Floor Washington, DC 20590		13. TYPE OF REPORT AND PERIOD COVERED: Final test report Tested: 12/11/08 to 03/04/09	
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15. SUPPLEMENTARY NOTES:			
16. ABSTRACT: Compliance tests were conducted on the subject 2009 Volkswagen GTI, 2-Door Hatchback Coupe, in accordance with the specifications of the Office of Vehicle Safety Compliance Test Procedure No. TP-135-01 for the determination of FMVSS 135 compliance. Test failures identified were as follows: None.			
17. KEY WORDS: Compliance Testing Safety Engineering FMVSS 135		18. DISTRIBUTION STATEMENT: Copies of this report are available from: NHTSA Technical Information Services NPO-411 1200 New Jersey Ave, S.E. Washington, DC 20590 Email: tis@nhtsa.dot.gov FAX: 202-493-2833	
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1.0 INTRODUCTION

Tests were conducted on a 2009 Volkswagen GTI, 2-Door Hatchback Coupe, manufactured by Volkswagen AG Germany, to determine compliance with FMVSS 135 "Passenger Car Brake Systems." All tests were conducted in accordance with the U.S. D.O.T., NHTSA Laboratory Procedure TP 135-01 and/or the corresponding TRC Inc. Test Procedure that was submitted to NHTSA for their approval. The Test Procedure was clearly described in the submitted document and has not been repeated in this report.

All stops were performed manually.

All tests were conducted by TRC Inc. personnel using the following TRC facilities:

7.5-Mile Test Track

Vehicle Maximum Speed

Burnish

Heating Snubs and Hot Performance Stops

Brake Cooling and Recovery Stops

Skid Pad

Cold Effectiveness Stops

High Speed Effectiveness Stops

Stops with Engine Off

Failed ABS

Failed Variable Proportioning Valve (if applicable)

Failed Hydraulic Circuits

Brake Power Assist Unit Failures

RBS Failure (if applicable)

EMF (Battery) Failure (if applicable)

Brake Slope

Parking Brake

Average PFC during the test period was 0.99 (Skid Pad) and 0.97 (Test Track) utilizing the ASTM E1337 w/E1336 tire method.

The test vehicle was ABS equipped. Therefore, the Wheel Lock Sequence and Adhesion Utilization Tests were not performed.

This vehicle met the requirements of FMVSS 135.

DATA SHEET 1 - VEHICLE INFORMATION

VEHICLE SPECS

Year: 2009	TRC No: C95801
Mfr: VOLKSWAGEN AG GERMANY	GVWR (Kg): 1941
Make: VOLKSWAGEN	GAWR Front(Kg): 1040
Model: GTI	GAWR Rear(Kg): 951
Body Style: 2-DR HATCHBACK	Wheelbase (mm): 2578.1
Mfr. Date: 09/08	Odometer: Start:79 MI. End:656 MI.
VIN: WVWEV71K29W105150	

BUSES ONLY

Chassis Mfg.: N/A
 Serial No.: N/A
 No. of Seats: N/A
 Manufacture Date: N/A

Engine Type: GASOLINE,TRBCHRGD,DIRECT INJECTED,I-4 CYL.,PISTON	
Displacement: 2.0 LITER	Tire Size: 225/45 R17 91H
Engine Hspwr: 200	Tire Type: CONTIPRO CONTACT,TUBELESS,RAD
Idle Speed(rpm): 744.8434	Tire Mfr.: CONTINENTAL
Transmission Type: MANUAL 6-SPD., FWD	GVWR Front Press.(kpa): 240
No. of Axles: 2	GVWR Rear Press.(kpa): 240

BRAKE APPLY SYSTEM

Brake Series: Front:DISC Rear:DISC	Power Assist Unit: YES
Brake Actuation	Pwr Unit w/Accumulator: NO
(Hydr. Circuit Split): DIAGONAL	Pwr Asst./Pwr Unit w/Backup: NO
Power Unit: VACUUM	Variable Prop. System: NO
Anti-Skid unit Mfr: TEVIS	Anti-Skid Device: YES
Parking Mechanism: NO	
Type of Parking Unit: NOT APPLICABLE	
Mstr Cylinder Dia(mm): 23.81	Pedal Ratio: 3.83:1

FRONT SYSTEM BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC	Material: CAST
Drum Construction: N/A	LF Drum Shoe Cage Dia.(mm): 0.00
Disc Construction: INTEGRAL CAST,VENTED	RF Drum Shoe Cage Dia.(mm): 0.00
Front Brake Dia.(mm): 312.17	LF Drum Dia. RESET(mm): 0.00
Fr Disc Thickness(mm): 25.07	RF Drum Dia. RESET(mm): 0.00
Lining Construction: Bonded	
FRONT BRAKE COMPONENT DIMENSIONS AND CODES:	
Inboard (Leading)	Outboard (Trailing)
Width(mm): 59.56	Width(mm): 59.61
Length(mm): 106.02	Length(mm): 105.97
Thickness(mm): 13.41	Thickness(mm): 13.46
Lining Code/Color: NAC N507H FF	Lining Code/Color: NAC N507H FF
Hyd. Piston Dia.(mm): 53.87 (X1)	

PLOTS\INTROPOS\SETUP + SETUP2

DATA SHEET 1 - (CONTINUED)

REAR SYSTEM

BRAKE COMPONENT MATERIALS AND CONSTRUCTION:

BRAKE TYPE: DISC

Material: CAST IRON

Drum Construction: N/A

LR Drum Shoe Cage Dia.(mm): 0.00

Disc Construction: INTEGRAL CAST

RR Drum Shoe Cage Dia.(mm): 0.00

Lining Construction: BONDED

LR Drum Dia. RESET(mm): 0.00

Rear Brake Dia.(mm): 285.83

RR Drum Dia. RESET(mm): 0.00

Rr Disc Thickness(mm): 11.89

Lining Construction: Bonded

REAR BRAKE COMPONENT DIMENSIONS AND CODES:

Inboard (Leading)

Outboard (Trailing)

Width(mm): 47.45

Width (mm): 47.45

Length(mm): 86.06

Length (mm): 86.16

Thickness(mm): 10.85

Thickness (mm): 10.92

Lining Code/Color: NAC D6234 FF ZNS US

Lining Code/Color: NAC D6234 FF ZNS US

Hyd Piston Dia (mm): 36.83

OTHER COMPONENT INFORMATION:

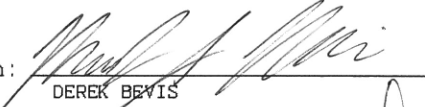
Friction-type Park Brake: HAND OPERATED

Non-Service Brake Type

Parking Brake: N/A

NOTE: If at any time after the test series has begun, any brake system part requires replacement or the brake system requires adjustments other than permitted in burnish and reburnish procedures, discontinue testing and notify the COTR immediately.

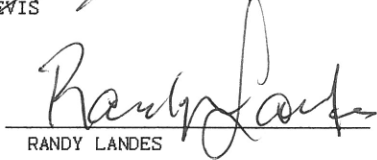
Technician:


DEREK BEVIS

Date:

3/6/09

Quality Assurance:


RANDY LANDES

3.0 SUMMARY OF TESTING

		Specification and Limit				TEST RESULTS (In compliance if one stop meets requirement)			
TEST	Loading Conditio n	Speed (km/h)	Min. Pedal Force (N)	Max. Pedal Force (N)	Stopping Distance Requirement (m)	Shortest Stop Min. Pedal Force (N)***	Shortest Stop Max. Pedal Force Newtons (Average – N)	Shortest Stop Stopping Distance (m) (Corrected)	PASS Fail
Equipment Requirements					Specified Equipment	Vehicle contains specified equipment			Pass
Vehicle Maximum Speed	LLVW	NA				180.5 km/h avg.			NA
Burnish	GVWR	80				200, 80 - 0 km/h stops @ 3.0 mpsps			NA
Wheel Lockup Sequence w/o ABS	GVWR				Lockup of front wheels prior to rear	ABS equipped – not required.			NA
Wheel Lockup Sequence w/o ABS	LLVW					ABS equipped – not required.			NA
Adhesion Utilization w/o ABS	LLVW				Rear axle adhesion utilization curve below specified value	ABS equipped – not required.			NA
Adhesion Utilization w/o ABS	GVWR					ABS equipped – not required.			NA
Cold Effectiveness	GVWR	100	65	500	70	5	470.4	44.9	Pass
High Speed Effectiveness	GVWR	154.2	65	500	spd. depend. – 144.2	5	448.1	86.7	Pass
Stops with Engine Off	GVWR	100	65	500	70	5	437.4	43.0	Pass
Cold Effectiveness	LLVW	100	65	500	70	5	456.3	41.7	Pass
High Speed Effectiveness	LLVW	154.2	65	500	spd. depend. – 144.2	5	416.6	84.4	Pass
Failed Antilock	LLVW	100	65	500	85	5	104.7	64.6	Pass
Failed Proportioning Valve	LLVW	100	65	500	110	5	NA	NA	NA
Failed Hydraulic Circuit #1	LLVW	100	65	500	168	5	435.7	86.9	Pass
Failed Hydraulic Circuit #2	LLVW	100	65	500	168	5	475.9	75.9	Pass
Failed Hydraulic Circuit #1	GVWR	100	65	500	168	5	464.7	91.1	Pass
Failed Hydraulic Circuit #2	GVWR	100	65	500	168	5	443.0	97.0	Pass
Failed Antilock	GVWR	100	65	500	85	5	152.8	58.7	Pass
Failed Proportioning Valve	GVWR	100	65	500	110	5	NA	NA	NA
Regenerative Brake System (RBS) Failure	GVWR	100	65	500	168	5	NA	NA	NA
Electromotive Force (EMF) – Battery Failure	GVWR	100	65	500	70	5	NA	NA	NA
Power Brake Unit Failure	GVWR	100	65	500	168	5	488.9	148.4	Pass
Parking Brake - Uphill	GVWR	-	-	400	Hold for 5 min.?	NA	281.8	Yes-Holds	Pass
Parking Brake - Downhill	GVWR	-	-	400	Hold for 5 min.?	NA	284.2	Yes-Holds	Pass
Heating Snubs	GVWR	120-60	NA	NA	15 Snubs- 3.0 mpsps	5	52 Vis. Avg.	NA	NA
Hot Performance Stop #1	GVWR	100	65	345 avg	67.8	5	428.6 (252.3)	46.2	Pass
Hot Performance Stop #2	GVWR	100	65	500	89	5	556.8 (313.4)	43.8	Pass*
Brake Cooling	GVWR	50	NA	NA	4 Stops - 3.0 mpsps	5	66 Vis. Avg.	NA	NA
Recovery Performance Stop #1	GVWR	100	65	345 avg	One of the two stops between 33.1 and 59.6 meters.	5	289.7 (202.6)	47.3	Pass
Recovery Performance Stop #2	GVWR	100	65	345 avg		5	357.2 (272.0)	42.1	
Final Inspection-Brake Integrity	Check components for detachment, fracture or lubricants.					No detachments or fractures-normal appear. & colr.			Pass
Final Inspection- Reservoirs/Warning Indicators	Master cylinder or brake power reservoir shall meet the volume and label requirements of S5.4.2 and S5.4.3.					Brake system has sufficient capacity and indicators are in compliance.			Pass

*** Note: The Shortest Stop Minimum Pedal Force represents the minimum force value required to engage the data acquisition's recording mode.

*See Appendix C – Contractor's Comments.

DATA SHEET 3 - VEHICLE WEIGHT

VEHICLE: 2009 VOLKSWAGEN GTI

NHTSA No. C95801 Date: 12/23/08

Tire Pressure(cold): Front (kpa) 240 Rear (kpa) 240
 Odometer: Start 79 MI. End 656 MI.
 Scale(s) Used: TRC Scales

NOTE: GVWR, LLVW and axle weights to be measured within +0% and -1%.

GVWR/GAWR INFORMATION
 (From Veh. Certification Label)

UNLOADED VEHICLE WEIGHT(UVW)

GVWR(Kg): 1941
 GAWR Front(Kg): 1040
 GAWR Rear(Kg): 951

L Front(Kg): 413 L Rear(Kg): 274
 R Front(Kg): 440 R Rear(Kg): 260
 T Front(Kg): 853 T Rear(Kg): 534
 Total UVW(Kg): 1387

TARGET LIGHT LOADED WEIGHT(LLVW):

ACTUAL LIGHT LOADED WEIGHT(LLVW):

NOTE 1: LLVW = UVW+181.4Kg

NOTE 2: Weight distributed in front passenger seat area.

NOTE 3: Neither axle load at LLVW less than at UVW; ballast as required.

L Front(Kg): 456 L Rear(Kg): 323
 R Front(Kg): 484 R Rear(Kg): 308
 T Front(Kg): 940 T Rear(Kg): 631
 Total LLVW(Kg): 1571

L Front(Kg): 474 L Rear(Kg): 332
 R Front(Kg): 466 R Rear(Kg): 298
 T Front(Kg): 940 T Rear(Kg): 630
 Total Actual Test LLVW(Kg): 1570

Load: Driver/Observer 118(Kg) + Instru.41(Kg) + Ballast 22(Kg) = 181(Kg)

FULLY LOADED TEST WEIGHT (ACTUAL GVWR)

NOTE 1: Vehicle loaded so axle loads proportional to GAWR shown previously.

NOTE 2: But no axle weight to be less than at LLVW.

NOTE 3: If weight on any axle at LLVW exceeds the axle's proportional share of the GVWR, the load required to reach GVWR is placed so that the weight on that axle remains the same as at LLVW.

L Front(Kg): 499 L Rear(Kg): 475
 R Front(Kg): 514 R Rear(Kg): 452
 T Front(Kg): 1013 T Rear(Kg): 927
 Total Fully Loaded GVWR(Kg): 1940

Load: Driver/Observer 118(Kg) + Instru. 41(Kg) + Ballast 394(Kg)= 553(kg)

Technician:

DEREK BEAVIS

Date:

3/6/09

Quality Assurance:

RANDY LANDES

DATA SHEET 4 - EQUIPMENT REQUIREMENTS (S5)

SERVICE BRAKE SYSTEM (S5.1)

Vehicle equipped with a service brake system acting on all wheels? YES

Wear Adjustment (S5.1.1):

Service Brakes are compensated for wear by means of a system of automatic adjustment? YES

Describe: DISC: AUTOMATIC CLEARANCE TAKE-UP.

Wear Status (S5.1.2):

Wear status of service brakes is indicated by:

(A) Acoustic or optical device? YES

Describe: ELECTRONIC WEAR SENSOR, LF ONLY.

(B) Visual check outside or under vehicle? YES

Describe: FRONT AND REAR: LOOK THROUGH CALIPER.

PARKING BRAKE SYSTEM (S5.2)

Vehicle equipped with a parking brake system of a friction type with solely mechanical means to retain engagement: YES

CONTROLS (S5.3)

(A) Service brakes activated by means of a foot control? YES

(B) Parking brake control is independent of the service brake control? YES

(C) Parking brake control is hand or foot operated? YES

(D) ABS, if equipped, cannot be manually disabled? YES

DATA INDICATES COMPLIANCE: YES

COMMENTS: NONE.

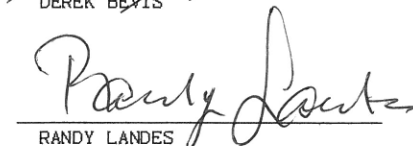
Tester/Technician:


DEREK BEVIS

Date:

3/6/09

Quality Assurance:


RANDY LANDES

DATA SHEET 5 - VEHICLE MAX SPEED

VEHICLE: 2009 VOLKSWAGEN GTI

NHTSA No. C95801

Date: 12/23/08

Ambient Temperature: 32°F

Wind Velocity: 7(MPH)

Road PFC: 0.98

Wind Direction: 267°

Odometer: Start 138(mi) End 154(mi)

TEST WEIGHT: Total (Kg): 1570

Front (Kg): 940

Rear (Kg): 630

ESTABLISH VEHICLE MAXIMUM SPEED

VEHICLE LOAD: LLVW

IBT: N/A

GEAR: Drive

DECEL RATE: N/A

PEDAL FORCE: N/A

WHEEL LOCKUP: N/A

TEST SPEED: Maximum attainable from

INTERVAL: N/A

a standing start in 3.2 km.

1. Ballast Vehicle to LLVW
2. Accelerate at a maximum rate from a standing start for a distance of 3.2 km on a level surface.
3. Repeat in opposite direction.
4. Record speed attained in each direction and use the average of the two runs.

	DIRECTION	MAX SPEED (km/h)		Time 0 - 100 KPH (seconds)
		Visual	Recorded	
Run No. 1	South	180 kph	180.5	8.52
Run No. 2	North	180 kph	180.5	8.14

AVERAGE = 180.5 km/h

COMMENTS: INV DATA, Section 0001, 02/02/09, 11:59:09

Tester/Technician:

DEREK BEVIS

Date:

3/6/09

Quality Assurance:

RANDY LANDES

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
Make: VOLKSWAGEN
Model: GTI
Body Style: 2-DR HATCHBACK
Front Cold Tire Pressure: 240 (Kpa)
Rear Cold Tire Pressure: 240 (Kpa)

Transportation Research Center, Inc.
10820 State Route 347
East Liberty, Ohio 43319
(937)666-2011 www.trcpg.com

Date Tested: 02/04/09

DATA SHEET 6 - BURNISH AT GVWR

Testing Conditions: INV DATA, Section 0002, 02/04/09, 08:51:26

Weather Conditions: 13°F Wind:10 mph 323°

Start Odo.: 181 End Odo.: 403

Schedule:

Initial Brake Temperature Less Than 100°C
Initial Speed 80 km/h to zero
200 stops with transmission in gear

Performance Requirements:

Interval between runs: Time necessary to reduce IBT to 100 C° or 2 km distance, whichever occurs first.
Constant decel rate: 3.0 m/s²
Pedal force adjusted to maintain constant decel.
No Lock-Up allowed longer than 0.1 sec above 15 km/h
Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	MAX.	AVG.	
#	SPD	FRONT	FRONT	REAR	REAR	PEDAL	PEDAL	AVG.
	(kph)	IBT	IBT	IBT	IBT	FORCE	FORCE	DECEL
		(°C)	(°C)	(°C)	(°C)	(N)	(N)	(m/sec ²)
1	79.86	20	18	31	31	84.94	48.06	2.98
10	80.97	48	44	99	105	53.08	43.37	3.14
20	80.24	55	51	108	126	58.56	40.73	3.11
30	80.42	58	55	100	107	57.64	39.15	3.04
40	80.74	50	46	80	88	52.89	41.26	3.12
50	79.42	46	43	78	83	60.46	44.74	3.05
60	80.13	45	44	79	83	49.38	36.01	3.04
70	80.28	43	42	79	79	51.34	41.81	3.12
80	80.18	44	44	79	79	54.55	40.47	3.06
90	80.18	44	45	82	83	55.19	38.78	2.86
100	80.24	44	46	82	85	53.71	41.60	3.17
110	80.92	43	45	80	83	52.52	44.29	2.97
120	79.90	65	63	104	108	59.12	39.57	3.04
130	80.24	57	57	96	101	48.38	39.39	3.00
140	81.30	56	54	94	101	70.38	42.08	2.90
150	80.88	60	54	96	99	59.46	43.50	3.11
160	80.32	63	56	92	96	50.62	38.28	3.06
170	80.57	66	61	94	97	55.45	38.07	3.04
180	79.51	63	61	94	97	57.38	40.73	3.03
190	81.40	57	52	91	93	55.13	41.58	2.98
200	81.02	61	58	93	97	68.48	44.69	2.93

COMMENTS: THIS VEHICLE ABS EQUIPPED. DATA SHEETS 7-10 NOT INCLUDED.

BRAKE ADJUSTMENT

Schedule:

Adjust service brakes; record procedure and amount adjusted.

Left Front: DISC DISC BRAKE NO ADJUSTMENT REQUIRED
Right Front: DISC DISC BRAKE NO ADJUSTMENT REQUIRED
Left Rear: DISC DISC BRAKE NO ADJUSTMENT REQUIRED.
Right Rear: DISC DISC BRAKE NO ADJUSTMENT REQUIRED.
DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS
Recorded Data Processed by: CHUCK JENKINS
Approving Laboratory Official: RANDY LANDES

Observer: NONE
Date: 02/20/09
Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

Transportation Research Center, Inc.
 10820 State Route 347
 East Liberty, Ohio 43319
 (937)666-2011 www.trcpg.com

Date Tested: 02/05/09

DATA SHEET 11 - COLD EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 0015, 02/05/09, 09:33:09

Weather Conditions: 10°F Wind: 2 mph 178° Start Odo.: 412 End Odo.: 420

Schedule:

Initial Brake Temperature 65 - 100 C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 70m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	100.20	82	79	86	83	47.2	47.0	480.23	345.55	13.03	8.02
2	100.21	74	73	72	68	46.3	46.1	472.68	353.71	13.89	7.95
3	99.79	79	79	81	76	44.7	44.9	470.44	345.05	13.00	7.89
4	99.30	84	84	86	79	46.2	46.9	471.26	349.62	14.40	7.94
5	100.87	86	86	89	84	44.7	43.9	506.34	367.03	14.63	8.63
6	99.65	85	85	90	82	46.4	46.7	471.99	343.76	15.06	7.84

STOP	DRIVER VEHICLE STOP COMMENTS				
#	(Wheel Lock up - Direction of Stop - Stay in Lane)				
1	-	NOX	SOUTH	YES	
2	-	NOX	SOUTH	YES	
3	-	NOX	SOUTH	YES	
4	-	NOX	SOUTH	YES	
5	-	NOX	SOUTH	YES	
6	-	NOX	SOUTH	YES	

Corrected Distances are used to determine shortest stopping distance.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/05/09

DATA SHEET 12 - HIGH SPEED EFFECTIVENESS AT GVWR

Testing Conditions: INV DATA, Section 0020, 02/05/09, 11:03:29

Weather Conditions: 16°F Wind: 4 mph 184° Start Odo: 425 End Odo: 434

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed: 80% max km/h, not greater than 160km/h
 6 stops with transmission in gear
 Target Initial Speed: 144.42 kph

Performance Requirements:

One Stop with:
 Stopping Distance less than: 154.2 meter
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAE 299)	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	143.40	88	82	88	86	87.5	88.8	450.65	293.24	13.78	8.67
2	142.88	83	83	80	70	88.3	90.2	387.08	282.77	13.96	8.60
3	143.50	88	90	85	73	85.6	86.7	448.09	325.90	15.07	8.85
4	143.65	85	88	78	64	87.2	88.2	415.75	292.45	14.97	8.60
5	143.45	87	94	81	64	87.3	88.4	470.12	366.32	16.80	8.77
6	144.02	87	93	79	62	87.6	88.1	476.93	322.13	15.29	8.69

STOP	DRIVER VEHICLE STOP COMMENTS		
#	(Wheel Lock up - Direction of Stop - Stay in Lane)		
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/05/09

DATA SHEET 13 - STOPS WITH ENGINE OFF AT GVWR

Testing Conditions: INV DATA, Section 0025, 02/05/09, 11:42:23

Weather Conditions: 17°F Wind: 6 mph 200° Start Odo.: 436 End Odo.: 442

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 70m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
1	99.58	77	78	78	63	49.2	49.6	370.01	231.01	19.19	7.68
2	99.84	81	85	81	67	45.3	45.5	474.08	343.26	14.12	7.86
3	100.31	82	87	87	73	44.5	44.2	524.86	342.97	14.33	8.10
4	100.48	78	82	85	70	44.1	43.7	447.99	302.24	17.07	8.51
5	99.49	78	83	86	71	42.5	43.0	437.44	336.64	14.55	8.29
6	98.83	79	84	86	71	42.7	43.7	445.64	346.35	14.63	8.41

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock-Up - Direction of Stop - Stay in Lane)		
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801 Transportation Research Center, Inc.
 Make: VOLKSWAGEN 10820 State Route 347
 Model: GTI East Liberty, Ohio 43319
 Body Style: 2-DR HATCHBACK (937)666-2011 www.trcpg.com
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa) Date Tested: 02/05/09

DATA SHEET 14 - COLD EFFECTIVENESS AT LLVW

Testing Conditions: INV DATA, Section 0030, 02/05/09, 13:20:01

Weather Conditions: 20°F Wind: 11 mph 190° Start Odo.: 445 End Odo.: 451

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 70m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	MAX.	AVG.
	(kph)	IBT	IBT	IBT	IBT	(meter)	(SAE 299)	FORCE	FORCE	DECEL	DECEL
		(°C)	(°C)	(°C)	(°C)		(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	99.64	68	73	64	58	41.4	41.7	456.32	322.87	14.70	8.90
2	98.92	79	83	63	55	43.2	44.2	379.61	245.18	15.02	8.63
3	100.99	79	84	61	51	59.1	58.0	429.65	179.75	15.56	2.30
4	99.93	81	89	56	43	42.5	42.6	421.95	301.29	15.71	8.55
5	99.61	82	88	56	44	42.6	42.9	387.18	295.04	15.55	8.70
6	99.96	77	82	52	41	42.5	42.6	432.82	313.26	14.72	8.50

STOP	DRIVER VEHICLE STOP COMMENTS		
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)		
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES
5	-	NOX	SOUTH YES
6	-	NOX	SOUTH YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/05/09

DATA SHEET 15 - HIGH SPEED EFFECTIVENESS AT LLVW

Testing Conditions: INV DATA, Section 0035, 02/05/09, 13:46:36

Weather Conditions: 19°F Wind: 5 mph 213° Start Odo.: 451 End Odo.: 461

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed: 80% max km/h
 6 stops with transmission in gear

Performance Requirements:

One Stop with:
 Stopping Distance less than 154.2m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	MAX.	AVG.
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	144.73	82	88	61	49	87.3	87.0	297.41	213.71	14.67	9.25
2	143.09	82	91	57	42	83.2	84.8	463.21	311.02	17.38	9.10
3	143.83	84	92	54	38	84.4	85.1	425.83	330.97	16.76	9.16
4	144.77	82	88	47	31	85.4	85.0	428.73	320.92	16.79	9.08
5	144.96	83	88	44	29	86.3	85.7	393.59	294.01	15.78	9.12
6	146.41	85	92	46	33	86.8	84.4	416.60	308.70	16.39	9.23

STOP	DRIVER VEHICLE STOP COMMENTS				
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)				
1	-	NOX	SOUTH	YES	
2	-	NOX	SOUTH	YES	
3	-	NOX	SOUTH	YES	
4	-	NOX	SOUTH	YES	
5	-	NOX	SOUTH	YES	
6	-	NOX	SOUTH	YES	

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS
 Recorded Data Processed by: CHUCK JENKINS
 Approving Laboratory Official: RANDY LANDES

Observer: NONE
 Date: 02/20/09
 Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
Make: VOLKSWAGEN
Model: GTI
Body Style: 2-DR HATCHBACK
Front Cold Tire Pressure: 240 (Kpa)
Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/05/09

DATA SHEET 16 - ANTILOCK FUNCTIONAL FAILURE AT LLVW

Testing Conditions: INV DATA, Section 0040, 02/05/09, 14:48:12

Weather Conditions: 19°F Wind: 12 mph 195° Start Odo.: 462 End Odo.: 462

Schedule:

Initial Brake Temperature: 65-100°C
Initial Speed 100 km/h to zero
6 stops with transmission in neutral

Performance Requirements:

One Stop with:
Stopping Distance less than 85m
Pedal force between 65N and 500N
No Lock-Up allowed longer than 0.1 sec above 15 km/h
Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX.	AVG.
		IBT (°C)	IBT (°C)	IBT (°C)	IBT (°C)					DECEL (m/sec ²)	DECEL (m/sec ²)
1	100.08	82	85	76	66	73.0	72.8	102.33	86.29	7.42	5.28
2	99.95	79	85	79	68	75.2	75.2	97.16	83.55	7.48	5.20
3	99.39	77	84	82	73	73.7	74.6	102.36	85.55	7.80	5.43
4	99.50	67	73	77	69	81.3	82.1	95.84	81.94	6.78	4.92
5	99.81	79	85	85	77	67.6	67.9	119.16	98.53	8.37	5.94
6	99.64	83	89	91	86	64.1	64.6	104.68	93.94	8.84	6.04

STOP DRIVER VEHICLE STOP COMMENTS
(Wheel Lock-Up - Direction of Stop - Stay in Lane)

1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

How was the ABS failure induced: REMOVED 2 30 AMP FUSES FROM UNDER THE HOOD.

Is brake system indicator lamp activated: YES (X) NO ()

Vehicle equipped with ABS integral variable proportioning valve. Cannot separately fail. Data Sheet 17 not included.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/09/09

DATA SHEET 18 - HYDRAULIC CIRCUIT FAILURE #1 AT LLVW

Testing Conditions: INV DATA, Section 0050, 02/09/09, 09:35:34

Weather Conditions: 33°F Wind: 4 mph 182° Start Odo.: 548 End Odo.: 553

Method of simulating failure: Disconnected Brake Line @ M/C Front Port

System Portion Failed: RF & LR

Schedule:

Initial Brake Temperature: 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(SAE 299)	FORCE	FORCE	(m/sec ²)	(m/sec ²)
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	99.84	77	8	12	75	92.7	93.0	470.33	343.81	10.73	4.11
2	99.41	83	7	11	72	89.1	90.2	521.06	354.95	12.12	4.23
3	99.85	84	6	11	66	92.5	92.8	464.50	344.21	10.95	4.24
4	99.29	86	6	12	57	85.7	86.9	435.72	327.27	11.31	4.42

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
=====	=====			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

Force Needed to Activate Brake Failure Lamp (N): N/A
 Fluid Removed (mL) to Activate Brake Failure Lamp: 165 ML
 Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/09/09

DATA SHEET 19 - HYDRAULIC CIRCUIT FAILURE #2 AT LLVW

Testing Conditions: INV DATA, Section 0055, 02/09/09, 14:04:25

Weather Conditions: 44°F Wind: 9 mph 198° Start Odo.: 570 End Odo.: 576

Method of simulating failure: Disconnected Brake Line @ M/C Rear Port

System Portion Failed: LF & RR

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
1	99.98	18	71	74	14	77.1	77.1	455.96	330.15	8.55	4.41
2	99.83	22	86	82	16	83.8	84.1	549.00	326.43	9.08	2.98
3	100.42	22	85	76	16	76.6	75.9	475.85	331.65	8.14	4.41
4	99.08	23	87	79	17	75.1	76.5	416.60	314.03	9.59	5.09

STOP # DRIVER VEHICLE STOP COMMENTS
 (Wheel Lock-Up - Direction of Stop - Stay in Lane)

STOP #	DRIVER	VEHICLE	STOP COMMENTS
1	-	NOX	SOUTH YES
2	-	NOX	SOUTH YES
3	-	NOX	SOUTH YES
4	-	NOX	SOUTH YES

Force Needed to Activate Brake Failure Lamp (N): N/A
 Fluid Removed (mL) to Activate Brake Failure Lamp: 165 ML
 Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G	NHTSA NUMBER: C95801	Transportation Research Center, Inc.
Make: VOLKSWAGEN		10820 State Route 347
Model: GTI		East Liberty, Ohio 43319
Body Style: 2-DR HATCHBACK		(937)666-2011 www.trcpg.com
Front Cold Tire Pressure: 240 (Kpa)		
Rear Cold Tire Pressure: 240 (Kpa)		Date Tested: 02/09/09

DATA SHEET 20 - HYDRAULIC CIRCUIT FAILURE #1 AT GVWR

Testing Conditions: INV DATA, Section 0060, 02/09/09, 10:32:24

Weather Conditions: 36°F Wind: 7 mph 191° Start Odo.: 556 End Odo.: 560

Method of simulating failure: Disconnected Brake Line @ M/C Front Port

System Portion Failed: RF & LR

Schedule:

Initial Brake Temperature 65-100°C
Initial Speed 100 km/h to zero
6 stops with transmission in neutral

Performance Requirements:

One Stop with:
Stopping Distance less than 168m
Pedal force between 65N and 500N
No Lock-Up allowed longer than 0.1 sec above 15 km/h
Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL	AVG. PEDAL	MAX. DECEL	AVG. DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	101.80	79	9	15	72	97.0	93.6	461.71	344.08	11.49	3.79
2	99.64	72	8	16	76	96.0	96.7	479.35	355.76	10.27	3.81
3	99.43	87	8	17	89	91.3	92.4	447.91	345.48	11.28	4.06
4	101.05	83	7	17	89	93.1	91.1	464.74	372.09	11.79	4.03

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS	Observer: NONE
Recorded Data Processed by: CHUCK JENKINS	Date: 02/20/09
Approving Laboratory Official: RANDY LANDES	Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/09/09

DATA SHEET 21 - HYDRAULIC CIRCUIT FAILURE #2 AT GVWR

Testing Conditions: INV DATA, Section 0065, 02/09/09, 13:20:36

Weather Conditions: 43°F Wind: 8 mph 169° Start Odo.: 564 End Odo.: 568

Method of simulating failure: Disconnected Brake Line @ M/C Rear Port

System Portion Failed: LF & RR

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 4 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE (meter)	CORRECTED DISTANCE (SAE 299) (meter)	MAX. PEDAL FORCE (N)	AVG. PEDAL FORCE (N)	MAX. DECEL (m/sec ²)	AVG. DECEL (m/sec ²)
		IBT (°C)	IBT (°C)	IBT (°C)	IBT (°C)						
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	99.96	20	81	91	19	96.9	97.0	442.98	386.63	6.91	3.78
2	100.14	19	81	88	15	106.2	105.9	474.61	387.68	5.15	3.45
3	100.24	17	92	93	14	104.7	104.2	480.01	425.09	5.58	3.49
4	101.24	16	88	93	13	104.3	101.8	454.53	381.70	5.30	3.54

STOP DRIVER VEHICLE STOP COMMENTS
 # (Wheel Lock-Up - Direction of Stop - Stay in Lane)

=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	-			NOX		SOUTH		YES			
2	-			NOX		SOUTH		YES			
3	-			NOX		SOUTH		YES			
4	-			NOX		SOUTH		YES			

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/12/09

DATA SHEET 22 - ANTILOCK FUNCTIONAL FAILURE AT GVWR

Testing Conditions: INV DATA, Section 0070, 02/12/09, 08:42:36

Weather Conditions: 36°F Wind: 24 mph 269° Start Odo.: 595 End Odo.: 595

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 85m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.		
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	DISTANCE	PEDAL	PEDAL	MAX.	AVG.
	(kph)	IBT	IBT	IBT	IBT	(meter)	(SAE 299)	FORCE	FORCE	DECEL	DECEL
		(°C)	(°C)	(°C)	(°C)		(meter)	(N)	(N)	(m/sec²)	(m/sec²)
1	100.08	80	80	79	85	67.5	67.4	162.13	136.54	8.01	5.59
2	100.85	85	82	93	94	72.6	71.3	147.73	128.87	7.52	5.31
3	100.45	75	66	79	78	82.2	81.5	126.26	112.49	7.27	4.69
4	100.67	86	79	93	87	59.5	58.7	152.79	138.71	9.12	6.23
5	100.51	81	74	92	84	69.0	68.3	138.50	125.83	7.34	5.52
6	100.58	79	73	91	80	67.6	66.8	156.20	135.52	7.79	5.81

STOP	DRIVER VEHICLE STOP COMMENTS				
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)				
1	-	NOX	SOUTH	YES	
2	-	NOX	SOUTH	YES	
3	-	NOX	SOUTH	YES	
4	-	NOX	SOUTH	YES	
5	-	NOX	SOUTH	YES	
6	-	NOX	SOUTH	YES	

How was the ABS failure induced: REMOVED 2 30 AMP FUSES FROM UNDER THE HOOD.

Is brake system indicator lamp activated: YES (X) NO ()

Vehicle equipped with ABS integral variable proportioning valve. Cannot separately fail. Data Sheet 23 not included.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/12/09

DATA SHEET 24 - BRAKE POWER UNIT OR PWR ASSIST UNIT IN/OP AT GVWR

Testing Conditions: INV DATA, Section 0080, 02/12/09, 09:38:12

Weather Conditions: 37°F Wind: 18 mph 270° Start Odo.: 598 End Odo.: 608

Failure Simulation: Disconnect primary source of power.

Method of rendering inoperative: Removed Engine Vacuum Hose at Booster

Schedule:

Initial Brake Temperature 65-100°C
 Initial Speed 100 km/h to zero
 6 stops with transmission in neutral

Performance Requirements:

One Stop with:
 Stopping Distance less than 168m
 Pedal force between 65N and 500N
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP	INIT	LEFT	RIGHT	LEFT	RIGHT	ACTUAL	CORRECTED	MAX.	AVG.	MAX.	AVG.
#	SPD	FRONT	FRONT	REAR	REAR	DISTANCE	(SAE 299)	PEDAL	PEDAL	DECEL	DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====	=====
1	100.33	66	66	83	72	167.7	166.6	477.01	435.75	3.91	2.41
2	100.99	68	65	89	74	147.4	144.5	502.12	459.46	3.58	2.67
3	100.41	64	63	86	68	157.2	155.9	482.18	446.04	4.53	2.51
4	100.01	69	65	86	71	148.4	148.4	488.93	455.45	3.72	2.62
5	100.34	71	66	88	72	149.8	148.8	486.35	450.02	3.76	2.62
6	100.50	72	66	88	74	150.6	149.1	480.57	440.89	3.65	2.59

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
=====	=====	=====	=====	=====
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES
3	-	NOX	SOUTH	YES
4	-	NOX	SOUTH	YES
5	-	NOX	SOUTH	YES
6	-	NOX	SOUTH	YES

Is the brake system indicator lamp activated: YES () NO (X)

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
Make: VOLKSWAGEN
Model: GTI
Body Style: 2-DR HATCHBACK
Front Cold Tire Pressure: 240 (Kpa)
Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/12/09

DATA SHEET 25 - PARKING BRAKE AT GVWR

Testing Conditions: INV DATA, Section 0085, 02/12/09, 11:12:10
Parking brake: NOT APPLICAB Non-service type: N/A

Service type: HAND OPERATED

Weather Conditions: 41°F Wind: 25 mph 258° Start Odo.: 610 End Odo.: 610

Test Weight: Total:1940kg Front:1013kg Rear: 927kg

Schedule:

Initial Brake Temperature <100°C or (Ambient temp.
if non-service brake type materials)
Loaded to GVWR with transmission in neutral
Drive onto 20% slope in forward and reverse directions.

Performance Requirements:

Up to Three Applies in each direction:
Parking brake must hold the vehicle stationary
in both directions for 5 minutes each.
Pedal force: Hand control: <400 N
Foot control: <500 N

NOTE: For vehicles with parking brake systems not utilizing the
service brake friction elements, the friction elements of such systems
are to be burnished prior to parking brake tests according to the
manufacturer's published recommendation as furnished to the purchaser.
If no recommendations are furnished, test the system in an unburnished
condition. If recommendations are furnished, record method used.

APPLY #	MAX SERVICE FORCE (N)	MAX P-BRAKE FORCE (N)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)	AVG REAR IBT (°C)	DRIVER VEHICLE STOP COMMENTS (Direction of Stop (Up/Down) - Brake holds/fails)			
1	73.5	281.8	26	25	25.3	-	0 REAPPLY	UPHILL	HOLDS 20%
2	70.1	284.2	24	22	23.1	-	0 REAPPLY	DOWNHILL	HOLDS 20%

Is brake system indicator lamp activated: YES (X) NO ()

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/12/09

DATA SHEET 26 - HEATING SNUBS AT GVWR

Testing Conditions: INV DATA, Section 0090, 02/12/09, 15:45:31

Schedule:

Conduct 15 snubs from 120 Km/h or 80% Vmax, whichever is slower, to 1/2 of initial speed.
 Attain required decel in 1 second and maintain that decel.
 Interval between snubs is 45 seconds and WOT to initial speed.

Performance Requirements:

Initial IBT for first snub is 55-65°C
 Maintain 3.0 m/s/s deceleration
 Vehicle Must stay in lane of 3.5m

SNUB	AVG. DECEL	Time Between Snubs	AVG. PEDAL FORCE	LEFT FRONT IBT	RIGHT FRONT IBT	LEFT REAR IBT	RIGHT REAR IBT	INIT SPD
#	(m/sec ²)	(second)	(N)	(°C)	(°C)	(°C)	(°C)	(kph)
1	2.77	--NA--	51.97	46	47	63	62	120.43
2	3.13	47	45.58	77	77	88	91	121.10
3	3.23	44	40.60	102	99	117	138	122.10
4	3.14	45	42.87	121	116	157	196	120.67
5	2.91	45	50.83	136	136	208	249	119.51
6	2.97	45	67.48	151	156	253	288	119.75
7	3.06	45	58.85	162	173	281	322	119.86
8	3.18	45	60.38	174	190	311	349	119.92
9	3.12	45	54.21	183	203	338	373	118.86
10	3.05	45	51.73	183	203	348	387	120.11
11	3.04	46	50.70	183	202	352	387	120.25
12	3.14	44	46.48	188	199	354	380	120.15
13	3.07	45	49.57	191	196	348	367	120.70
14	2.96	45	51.39	192	197	342	353	120.49
15	2.90	45	52.55	197	205	336	339	120.55

STOP #	DRIVER	VEHICLE	SNUB	COMMENTS
#	(Wheel Lock-Up	-	Direction of Stop	- Stay in Lane)
1	-	NOX	NORTH	YES
2	-	NOX	NORTH	YES
3	-	NOX	NORTH	YES
4	-	NOX	EAST	YES
5	-	NOX	EAST	YES
6	-	NOX	SOUTH	YES
7	-	NOX	SOUTH	YES
8	-	NOX	SOUTH	YES
9	-	NOX	WEST	NOX
10	-	NOX	NORTH	YES
11	-	NOX	NORTH	YES
12	-	NOX	NORTH	YES
13	-	NOX	NORTH	NOX
14	-	NOX	EAST	YES
15	-	NOX	SOUTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/12/09

DATA SHEET 27 - HOT PERFORMANCE AT GVWR

Testing Conditions: INV DATA, Section 0095, 02/12/09, 15:56:31

Schedule:

Make 2 stops from 100 kph
 Pedal Force: 1st stop is done with an average force less than the average recorded in the shortest GVWR Cold Effectiveness stop.
 2nd stop is done with a force less than 500 N.
 No Lock-Up allowed longer than 0.1 sec above 15 km/h.
Distance Requirements are based on the following:
 shortest stop in Data Sheet 11 is: 3
 Initial speed of stop: 99.79 (kph)
 Actual distance of stop: 44.7 (meter)
 Average pedal force: 345.0 (N)

Performance Requirements:

Stop Number 1 must be less than: 67.8 (meter)
 In addition the stopping distance for at least one of the of the two hot stops must be less than: 89 (meter)

STOP #	INIT SPD	LEFT FRONT	RIGHT FRONT	LEFT REAR	RIGHT REAR	ACTUAL DISTANCE	CORRECTED DISTANCE	MAX. PEDAL FORCE	AVG. PEDAL FORCE	MAX. DECEL	AVG. DECEL
	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(SAE 299) (meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
1	100.85	212	226	337	336	47.0	46.2	428.60	252.33	12.59	7.75
2	100.68	214	234	336	338	44.4	43.8	* 556.83	313.40	13.41	7.85

STOP #	DRIVER VEHICLE STOP COMMENTS			
	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	SOUTH	YES

Comments: *See Appendix C.

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS
 Recorded Data Processed by: CHUCK JENKINS
 Approving Laboratory Official: RANDY LANDES

Observer: NONE
 Date: 02/20/09
 Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/12/09

DATA SHEET 28 - BRAKE COOLING STOPS AT GVWR

Testing Conditions: INV DATA, Section 0100, 02/12/09, 15:59:12

Schedule:

Initial Brake Temperature:
 Achieved on completing Hot Performance
 Initial Speed 50 km/h to zero
 4 stops with transmission in gear

Performance Requirements:

Constant Decel rate: 3.0 m/s/s
 Pedal force adjusted as necessary
 No Lock-Up allowed longer than 0.1 sec above 15 km/h
 Vehicle Must stay in lane of 3.5m

STOP #	INIT SPD (kph)	AVG. DECEL (m/sec ²)	AVG. PEDAL FORCE (N)	LEFT FRONT IBT (°C)	RIGHT FRONT IBT (°C)	LEFT REAR IBT (°C)	RIGHT REAR IBT (°C)
1	50.32	2.50	71.70	184	215	296	283
2	49.56	2.70	62.84	151	179	253	239
3	50.20	2.90	66.74	119	141	212	207
4	50.15	2.75	61.12	97	109	174	183

STOP #	DRIVER VEHICLE STOP COMMENTS (Wheel Lock up - Direction of Stop - Stay in Lane)			
1	-	NOX	SOUTH	YES
2	-	NOX	WEST	YES
3	-	NOX	NORTH	YES
4	-	NOX	NORTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS	Observer: NONE
Recorded Data Processed by: CHUCK JENKINS	Date: 02/20/09
Approving Laboratory Official: RANDY LANDES	Date: 03/01/09

Vehicle: 2009 VOLKSWAGEN AG G NHTSA NUMBER: C95801
 Make: VOLKSWAGEN
 Model: GTI
 Body Style: 2-DR HATCHBACK
 Front Cold Tire Pressure: 240 (Kpa)
 Rear Cold Tire Pressure: 240 (Kpa)

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Date Tested: 02/12/09

DATA SHEET 29 - RECOVERY PERFORMANCE AT GVWR

Testing Conditions: INV DATA, Section 0105, 02/12/09, 16:06:07

Weather Conditions: 45°F Wind: 20 mph 308° Start Odo.: 614 End Odo.: 644

Schedule:

Make 2 stops from 100 kph
 Pedal Force: Both stops are performed with an average force less than the average recorded in the shortest GVWR Cold Effectiveness stop.

Performance Requirements:

One of the two stops must be within the following limits:
 Upper limit of corrected stopping distance: 59.6 (meter)
 Lower limit of corrected stopping distance: 33.1 (meter)

No Lock-Up allowed longer than 0.1 sec above 15 km/h.

Distance Requirements are based on the following:

shortest stop in Data Sheet 11 is: Stop3
 Initial speed of stop: 99.79 (kph)
 Actual distance of stop: 44.7 (meter)
 Average pedal force: 345.0 (N)

		LEFT	RIGHT	LEFT	RIGHT		CORRECTED	MAX.	AVG.		
	INIT	FRONT	FRONT	REAR	REAR	ACTUAL	DISTANCE	PEDAL	PEDAL	MAX.	AVG.
STOP	SPD	IBT	IBT	IBT	IBT	DISTANCE	(SAE 299)	FORCE	FORCE	DECEL	DECEL
#	(kph)	(°C)	(°C)	(°C)	(°C)	(meter)	(meter)	(N)	(N)	(m/sec ²)	(m/sec ²)
----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
1	100.24	89	94	153	173	47.5	47.3	289.68	202.60	19.70	7.61
2	99.54	105	106	156	187	41.7	42.1	357.19	271.98	14.10	8.49

STOP	DRIVER VEHICLE STOP COMMENTS			
#	(Wheel Lock-Up - Direction of Stop - Stay in Lane)			
----	=====			
1	-	NOX	NORTH	YES
2	-	NOX	NORTH	YES

DATA INDICATES COMPLIANCE: YES (X) NO ()

Driver: DEREK BEVIS Observer: NONE
 Recorded Data Processed by: CHUCK JENKINS Date: 02/20/09
 Approving Laboratory Official: RANDY LANDES Date: 03/01/09

DATA SHEET 30 (Part 1 of 5)
6.0 Test Completion Inspection (7.17)

VEHICLE: 2009 Volkswagen GTI NHTSA NO.: C95801 ODO.: 656 mi. DATE: 02/19/09

System Integrity (S5.6)

Each vehicle shall meet the complete performance requirements of this standard without:

(a) Detachment or fracture of any component of the braking system such as brake springs and brake shoes or disc pad facings, other than minor cracks, that do not impair attachment of the friction facings. All mechanical components of the braking system shall be intact and functional. Friction facing tearout (complete detachment of lining) shall not exceed 10 percent of the lining on any single frictional element.

(b) Any visible brake fluid or lubricant on the friction surface of the brake or leakage at the master cylinder or brake power unit reservoir cover, seal, and filler openings.

Friction Material Condition: Primary/Inner		Friction Material Condition: Secondary/Outer	
LF	Normal Appearance & Color	LF	Normal Appearance & Color
RF	Normal Appearance & Color	RF	Normal Appearance & Color
LR	Normal Appearance & Color	LF	Normal Appearance & Color
RR	Normal Appearance & Color	RR	Normal Appearance & Color
Drum (or Rotor) Condition:		Brake Fluid/Lubricant Inside Brakes:	
LF	Normal Appearance & Color	LF	None
RF	Normal Appearance & Color	RF	None
LR	Normal Appearance & Color	LR	None
RR	Normal Appearance & Color	RR	None
Hydraulic Component Condition:		Mechanical Component Condition:	
LF	Good	Brk/Pedal	Good
RF	Good	Power Brk	Good
LR	Good	Stop/Lamp	Good
RR	Good	Linkage	Good
M/Cyl	Good	Other	NA

COMPLIANCE: Yes X No

Comments: None.

Technician: Derek Bevis

DATA SHEET 30 (Part 2 of 5)
TEST COMPLETION INSPECTION (\$7.17)

VEHICLE: 2009 Volkswagen GTI;
 MASTER CYLINDER RESERVOIR:

NHTSA NO.: C95801;

GVWR: 1941 kg

DATE	02/19/09	Requirements	Pass	Fail
Reservoir Compartments (\$5.4.1)				
(1) Does master cylinder have a reservoir compartment for each brake subsystem?	<u>Yes</u>	Master cylinder shall have a reservoir compartment for each subsystem.	X	
	No			
(2) Does loss of fluid in one compartment result in complete loss from another compartment?	Yes	Loss of fluid from one compartment shall not cause complete loss from another compartment.	X	
	<u>No</u>			
Reservoir Capacity (\$5.4.2)				
Shall conform to requirements (1) or (2), state units:				
(1) For reservoirs having completely separate compartments for each subsystem (two separate, independent reservoirs):				
Subsystem 1 Subsystem reservoir capacity		Each compartment (reservoir) shall have a minimum capacity equivalent to the fluid displacement resulting when all wheel cylinders or caliper pistons serviced by that independent compartment/reservoir moves from a new lining, fully retracted position to a fully worn, properly adjusted, fully applied position. (Use Data Sheet 31 and Appendix 1A)	NA	NA
Subsystem 1 Fluid displaced from new to worn lining				
Subsystem 2 Subsystem reservoir capacity			NA	NA
Subsystem 2 Fluid displaced from new to worn lining				
2) For reservoirs utilizing a portion of the reservoir for a common supply to two or more subsystems:				
Total minimum capacity for the entire master cylinder reservoir (includes individual compartment reservoirs)	382 ml	Shall have total minimum capacity for entire reservoir for displacement resulting from all subsystem wheel cylinders or caliper positions moving from new lining to full worn condition as above.	X	
Fluid displaced from new to worn linings (ALL linings) *Value calculated from Data Sheet 31	179.0 ml*			

Comments: None.

Technician: Derek Bevis

DATA SHEET 30 (Part 3 of 5)
TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2009 Volkswagen GTI; NHTSA NO.: C95801; GVWR: 1941 kg

MASTER CYLINDER RESERVOIR:

DATE	02/19/09	Requirements	Pass	Fail
Master Cylinder Piston Displacement(S5.4.2) [If Common Reservoir Supply - continued from previous page]				
Fluid displaced by three strokes of master cylinder piston for Subsystem No. 1.	24 ml	Individual partial compartments of reservoir shall each have a minimum of fluid equal to at least the volume displaced by the master cylinder piston servicing the subsystem during a <u>full stroke</u> of the piston. NOTE: Procedure uses three strokes to ensure an accurate measurement.		
Fluid displaced by three strokes of master cylinder piston for Secondary (Subsystem No. 2)	24 ml			
Fluid displaced per stroke, Subsystem No. 1.	8.0 ml			
Fluid displaced per stroke, Subsystem No. 2.	8.0 ml			
Fluid available in partial compartment Subsystem No. 1	52 ml		X	
Fluid available in partial compartment Subsystem No. 2	66 ml		X	
Brake Power Unit Reservoir (S5.4.2)				
Volume displaced in charging system piston or accumulator to normal operating pressure plus wheel cylinder or caliper piston displacement.		Shall have a capacity at least equal to fluid displacement required to charge the system pistons on accumulators to normal operating pressure <u>plus</u> displacement when wheel cylinders or caliper pistons move from new lining to full worn condition as above.	NA	
Reservoir Labeling (S5.4.3)				
Exact copy of reservoir label: On top of master cylinder reservoir: <u>WARNING.</u> <u>CLEAN FILLER CAP BEFORE REMOVING.</u> <u>USE ONLY DOT 4 FLUID FROM A SEALED CONTAINER.</u>		Label shall read: "Warning, clean filler cap before removing; use only * fluid from a sealed container". * Fluid type specified in 49 CFR 571.116	X	
Measure letter height	3.2 mm	Letters shall be at least 3.2 mm/ 0.125" high	X	
Describe label attachment method and location. Printed label on top of the master cylinder <u>reservoir.</u>		Lettering shall be permanently affixed, engraved or embossed and located so as to be visible by direct view either on or within 100 mm/3.94 inches of the brake fluid reservoir filler plug or cap.	X	
Does the lettering contrast with the background?	<u>Yes</u>	If label is not engraved or embossed, letters shall be of a color that contrasts with the background	X	
	No			

Comments: None.

Technician: D. Bevis

DATA SHEET 30 (Part 4 of 5)
TEST COMPLETION INSPECTION (S7.18)

VEHICLE: 2009 Volkswagen GTI; NHTSA NO.: C95801; DATE: 02/19/09
BRAKE SYSTEM WARNING INDICATOR (S5.5)

CONDITION	ANSWER	REQUIREMENTS	PASS	FAIL
Brake Systems Indicator Lamp <u>Function Check</u> (S5.5.2) (Bulb and systems check)				
Describe location of brake indicator lamp: <u>Upper right hand quadrant of the instrument cluster (within speedometer nacelle).</u>	NA	Shall be in front, and in clear view, of driver.	X	
Does lamp light with ignition (start) switch at ON/RUN?	Yes	Automatic activation when ignition switch is "on" when engine not running , or ignition between "on" and "start" if is manufacturer check position- OR -single manual action by driver	X	
Does lamp light with ignition between ON and Start?	No			
Brake check description in owner's manual?	Yes	Manufacturer shall explain the brake check function test procedure in the owner's manual.	X	
Brake System Warning Indicator ACTIVATION (S5.5.1) DURATION (S5.5.3) FUNCTION (S5.5.4)				
CONDITION	Light ON?	REQUIREMENT	PASS	FAIL
A. In event of hydraulic leak (1) On or before appearance of pressure differential of 218 psi (split system)	NA	When ignition (Start) switch is ON , lamp must light whenever (A), (B), (C), or (D) occurs. In addition, if service brake system is not a split system, audible warning must be activated when any condition in (A) exists. Visual warning indicator for non-split systems must be flashing.	X	
(2) If any reservoir falls below either "safe" level or 25% of capacity, whichever is greater. Values: 217 ml or cc (ON at "min" mark).	Yes			
(3) On or before supply pressure to brake power unit falls to 50%	NA			
B. Electrical functional failure in an antilock or variable brake proportioning system.	Yes		X	
C. Application of the parking brake.	Yes			
D. Brake lining wear-out if optical warning.	Yes			
E. For a vehicle with <u>electrically-actuated service brakes</u> , failure of the source of electric power to the brakes or diminution of state of charge of the batteries.	NA			
F. For a vehicle with <u>electric transmission of the service brake control signal</u> , failure to a brake control circuit.	NA			
G. For an EV with RBS that is part of the service brake system failure of RBS.	NA			
Must have Audible alarm if <u>not split system</u> and a condition in (a) above exists?	NA			
If condition (A) (2) above does not exist, then fluid reservoir must be transparent for fluid check without the need for reservoir to be opened? (S5.4.4)	NA			
Indicator lamps remain activated as long as condition exists - ignition "on", and engine on or off? _____ (S5.5.3 DURATION))	Yes			
Visual warning – continuous or flashing? Audible warning –continuous or flashing?	Yes-Cont. Yes-Flash*			

Comments: *Two audible "chimes", also displayed on Driver's Information Center: "Stop! Brake Fluid, Owners Manual!"
Technician: D. Bevis

DATA SHEET 30 (Part 5 of 5)
TEST COMPLETION INSPECTION (\$7.18)

VEHICLE: 2009 Volkswagen GTI; NHTSA NO.: C95801; DATE: 02/18/09

BRAKE SYSTEM WARNING INDICATOR LABELING (\$5.5.5)

CONDITION AND REQUIREMENT	ANSWER NOTE: Standard requires that the answer to questions be YES	PASS	FAIL
Are visual indicators legible to driver in daylight and nighttime conditions when activated?	Yes	X	
Are visual indicator words 3.2 mm (.125") high minimum? Record Height: "Brake" – <u>3.2 mm</u> ; "ABS" – <u>3.2 mm</u> .	Yes	X	
Visual indicator words and background contrasting colors, one of which is red. Record colors <u>Letters – Red, Lens – Black</u>	Yes	X	
If split system, is there one brake indicator? If yes, does it say the word "Brake"? (With one symbol adjacent.)	Yes	X	
If not split system; is there a separate indicator for loss of fluid or fluid pressure? Does this indicator say "Stop-Brake Failure"? Are the letters block and not less than 6.4 mm (.25") in height? Record letter height _____	NA		
If separate indicator for: 1. Low brake fluid per S5.5.1(a)(1), does indicator say "Brake Fluid"? NOTE: not required for mineral oil system Record wording: _____ 2. Gross pressure loss per S5.5.1(a)(2), does indicator say "Brake Pressure"? Record wording _____ 3. Electrical functional failure in antilock or variable proportioning system per S5.5.1(b), letters and background contrasting colors one of which is yellow? Record colors <u>Lens – Black, Letters – Yellow</u> . Does indicator say "Antilock" or "ABS" or "Brake Proportioning"? Record wording: <u>"ABS"</u> . 4. Parking brake per S5.5.1(c), does indicator say "Park" or "Parking Brake"? Record wording: _____ 5. Brake lining wear-out per S5.5.1(d), does indicator say "Brake Wear"? Record wording - <u>From Driver's Information Center: "Check Brake Pads!"</u> 6. <i>If separate indicator for RBS, the letters and background shall be of contrasting colors, one of which is yellow. The indicator shall be labeled "RBS". RBS failure in a system which is part of the service brake system may also be indicated by a yellow lamp that also indicates "ABS" failure and displays the symbol "ABS/RBS."</i> Record wording: _____ 7. For any other function? If yes, Record _____ NA	NA NA Yes Yes NA *NA NA NA	X	

DATA INDICATES COMPLIANCE: YES X NO _____

Comments: *Not a separate indicator, but part of DIC.

Technician: D. Bevis

DATA SHEET 31 (Part 1 of 2)

CALCULATION OF MINIMUM RESERVOIR VOLUME REQUIREMENTS

VEHICLE: 2009 Volkswagen GTI; NHTSA NO.: C95801; DATE: 02/19/07

BRAKE		LINING		
LOCATION	TYPE	DESCRIPTION	MINIMUM THICKNESS	THICKNESS TO FULLY WORN (1) mm*
Left Front	Drum	Leading	Pre-test 13.41 mm	0
		Primary	Post Test 13.08 mm	
		Inboard X	Δ 0.33 mm	
	Disc X	Trailing	Pre-test 13.46 mm	0
		Secondary	Post Test 13.16 mm	
		Outboard X	Δ 0.30 mm	
LINING CLEARANCE:	Diametrical (2): N/A	Inboard – 0.15mm.	Outboard – 0.15 mm.	
WHEEL CYLINDER DIAMETER (3): N/A		CALIPER PISTON DIAMETER (3): 53.87 mm (x1 piston).		
SHOE CAGE DIAMETER (4) <u>N/A</u> ; CENTER POINT OF BRAKE ASSY TO CENTER POINT OF W.C. <u>N/A</u>				
Right Rear	Drum	Leading	Pre-test 10.85 mm	0
		Primary	Post Test 10.26 mm	
		Inboard X	Δ 0.59 mm	
	Disc X	Trailing	Pre-test 10.92 mm	0
		Secondary	Post Test 10.19 mm	
		Outboard X	Δ 0.73 mm	
LINING CLEARANCE:	Diametrical (2) N/A mm	Inboard – 0.15 mm	Outboard – 0.15 mm	
WHEEL CYLINDER DIAMETER (3): N/A		CALIPER PISTON DIAMETER (3): 36.83 mm (x1 piston).		
SHOE CAGE DIAMETER (4): N/A		CENTER POINT OF BRAKE ASSY TO CENTER PT. OF W.C.: N/A		
CIRCUIT #1 CONSISTS OF:	LF	LR - X	RF- X	RR
CIRCUIT #2 CONSISTS OF:	LF - X	LR	RF	RR - X
(1) MFRS. RECOMMENDATIONS – FRONT and REAR: Difficult to discern – used 0 mm as default.				
(2) REAR – NA FRONT – NA				
(2) DRUM BRAKES, MEASURED AT HORIZONTAL CENTERLINE: NA.				
(3) MFRS. DATA: FRONT – 54 mm, 1 piston; REAR – 38 mm, 1 piston.				
(4) RESET POSITION: NA.				

**Comments: Manufacturer's total thickness (new linings) data: Frt.: 20.7/20.3 mm;
Rears: 16.9 mm. To worn: Frt.: 9.0 mm; Rears: 9.0 mm.**

Technician: D. Bevis

DATA SHEET 31 – SECTION CONTINUED (Part 2 of 2)

Vehicle: 2009 Volkswagen GTI;

NHTSA No.: C95801;

Date: 02/19/09

Procedure and Example for Determining Master Cylinder Volume Requirement

The procedure followed for determining the minimum volume requirements is outlined in the example shown below. The required data is taken from the previous page, both measured and manufacturer's data.

DISC BRAKES

Volume Required, $V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times [\pi (D^2)]/4$, where –

V_r = Volume required per wheel
 Δt = Change in thickness (average)
 i = Inboard
 o = Outboard
 D = Caliper cylinder diameter
 c = Average clearance

Using the above equations, the volume requirements for Subsystem No. 1 (LR, RR) and Subsystem No. 2 (RF, LR) were calculated utilizing measured and manufacturer's provided data to create the greatest displacement, as shown below:

Disc Brake:
(Front)

$$V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi D^2}{4}$$
$$\Delta t_i = 13.41 \text{ mm}$$
$$\Delta t_o = 13.46 \text{ mm}$$
$$t_{ic} + t_{oc} = 0.30 \text{ mm}$$
$$D = 54 \text{ mm}$$
$$V_r = (13.14 + 0.15 + 13.46 + 0.15) \frac{\pi (54)^2}{4}$$
$$= 27.17 (2290.2)$$
$$= 62225.3 \text{ mm}^3 = 62.2 \text{ ml (x1 Piston)} = 62.2 \text{ ml}$$

Disc Brake:
(Rear)

$$V_r = (\Delta t_i + t_{ic} + \Delta t_o + t_{oc}) \times \frac{\pi D^2}{4}$$
$$\Delta t_i = 10.85 \text{ mm}$$
$$\Delta t_o = 10.92 \text{ mm}$$
$$t_{ic} + t_{oc} = 0.30 \text{ mm}$$
$$D = 38 \text{ mm}$$
$$V_r = (11.85 + 0.15 + 10.92 + 0.15) \frac{\pi (38)^2}{4}$$
$$= 24.07 (1134.1)$$
$$= 27298.1 \text{ mm}^3 = 27.3 \text{ ml (x1 Piston)} = 27.3 \text{ ml}$$

For System 1 (RF & LR)

$$V_{r1} = 62225.3 \text{ mm}^3 + 27298.1 \text{ mm}^3 = 89523.4 \text{ mm}^3$$

$$V_{r1} = 89523.4 \text{ mm}^3 = (89.5 \text{ ml})$$

For System 2 (LF & RR)

$$V_{r2} = V_{r1}$$

$$V_{r2} = 89523.4 \text{ mm}^3 = (89.5 \text{ ml})$$

$$\text{TOTAL VOLUME REQUIRED} = V_t = V_{r1} + V_{r2} = 89.5 + 89.5 = 179.0 \text{ ml}^*$$

Section 6.0

Photographs

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
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February 2009

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Left Front 3/4 View

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
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February 2009

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Right Rear 3/4 View

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
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February 2009

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MFD BY VOLKSWAGEN AG GERMANY 09/08
GVWR 4278 GAWR FRONT 2293 / REAR 2096 LBS
THIS VEHICLE CONFORMS TO ALL APPLICABLE U.S.
FEDERAL MOTOR VEHICLE SAFETY, BUMPER AND
THEFT PREVENTION STANDARDS IN EFFECT ON
THE DATE OF MANUFACTURE SHOWN ABOVE.

WVWEV71K29W105150

PASSENGER CAR

8370490 1034 3



Vehicle Certification Placard

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
NHTSA No. C95801
February 2009



TIRE AND LOADING INFORMATION INFORMATION SUR LES PNEUS ET LA CHARGE

SEATING CAPACITY/NOMBRE DE PLACES TOTAL 5 FRONT/AV 2 REAR/AR 3

THE COMBINED WEIGHT OF OCCUPANTS AND CARGO SHOULD NEVER EXCEED
LE POIDS COMBINE DES OCCUPANTS ET DE LA CHARGE NE DOIT JAMAIS DEPASSER 506 KG OR 1116 LBS

TIRE PNEU	SIZE DIMENSIONS	COLD TIRE PRESSURE PRESSION GONFLAGE PNEUS FROIDS
FRONT/AVANT	225/45 R17	240 KPA, 35 PSI
REAR/ARRIERE	225/45 R17	240 KPA, 35 PSI
SPARE/SECOURS	205/55 R16	240 KPA, 35 PSI

**SEE OWNER'S MANUAL
FOR ADDITIONAL
INFORMATION
VOIR MANUEL DU
PROPRIETAIRE POUR
LES DETAILS**

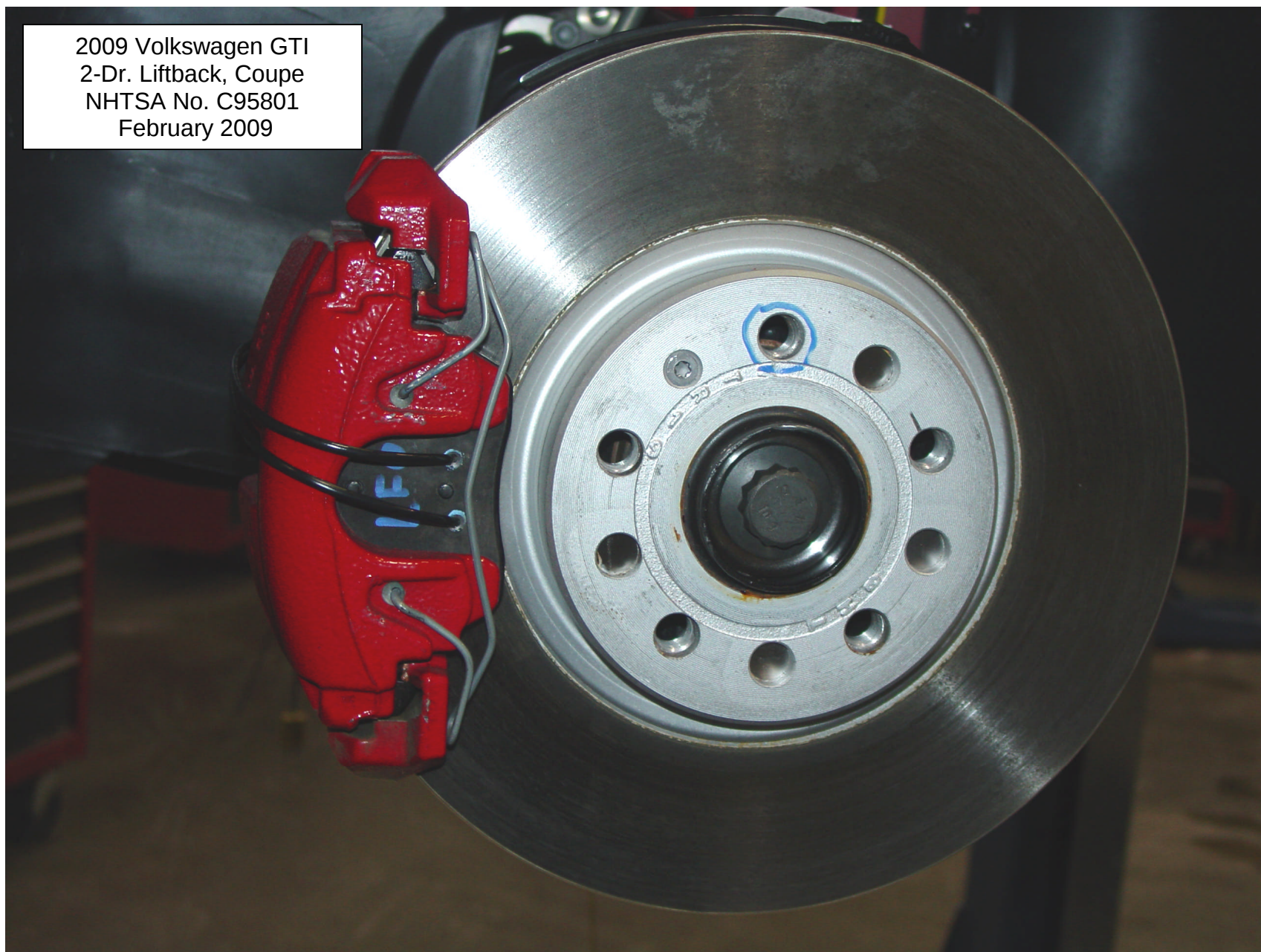


1K0 010 647 N

Vehicle Tire Information Label

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
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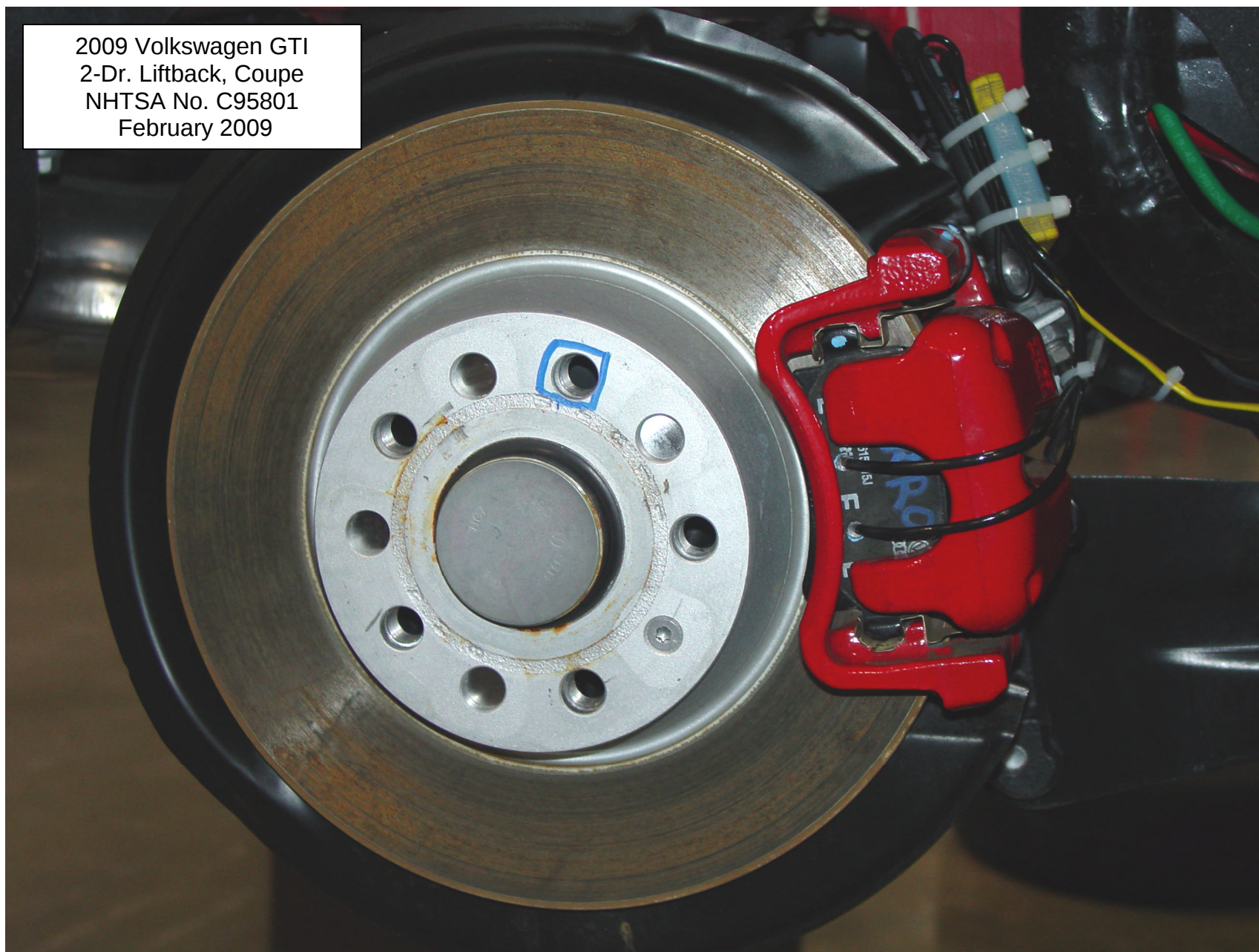
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Left Front Thermocouple Installation

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
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Right Rear Thermocouple Installation

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
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February 2009

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Test Instrumentation in Vehicle

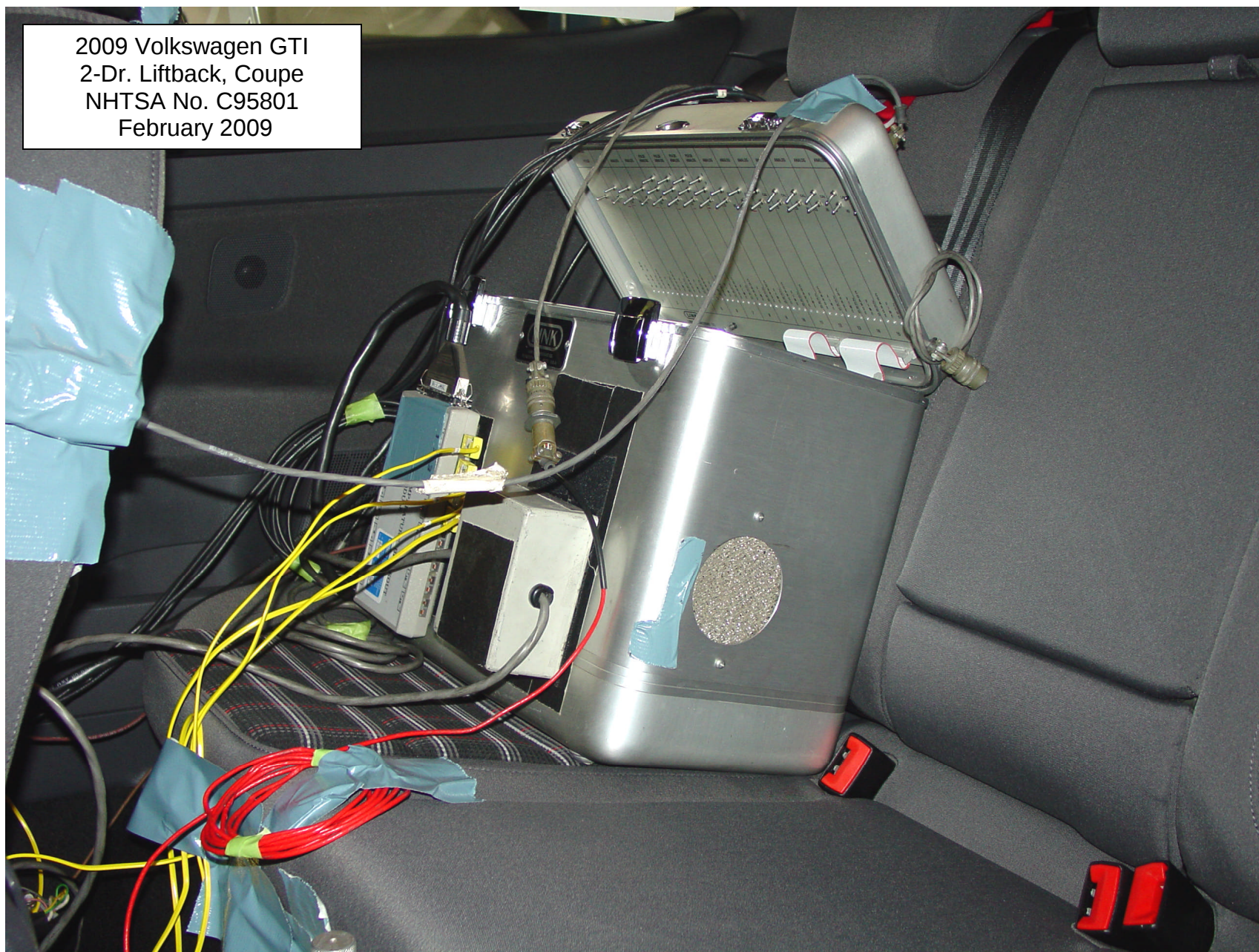
2009 Volkswagen GTI
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Test Instrumentation in Vehicle

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Test Instrumentation in Vehicle

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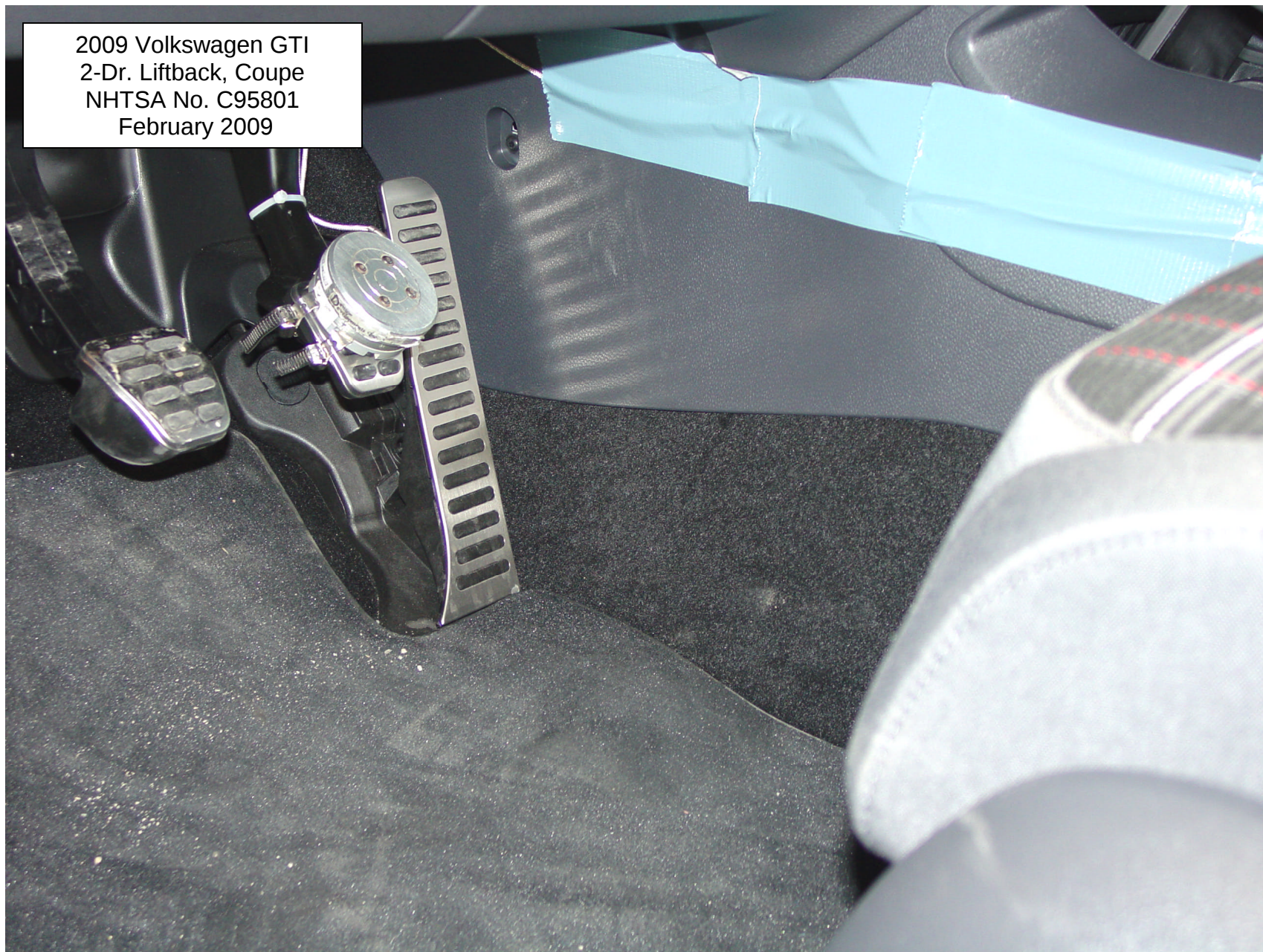
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Test Instrumentation in Vehicle

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Test Instrumentation in Vehicle

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Vehicle Being Weighed

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
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Ballast in Vehicle

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
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February 2009

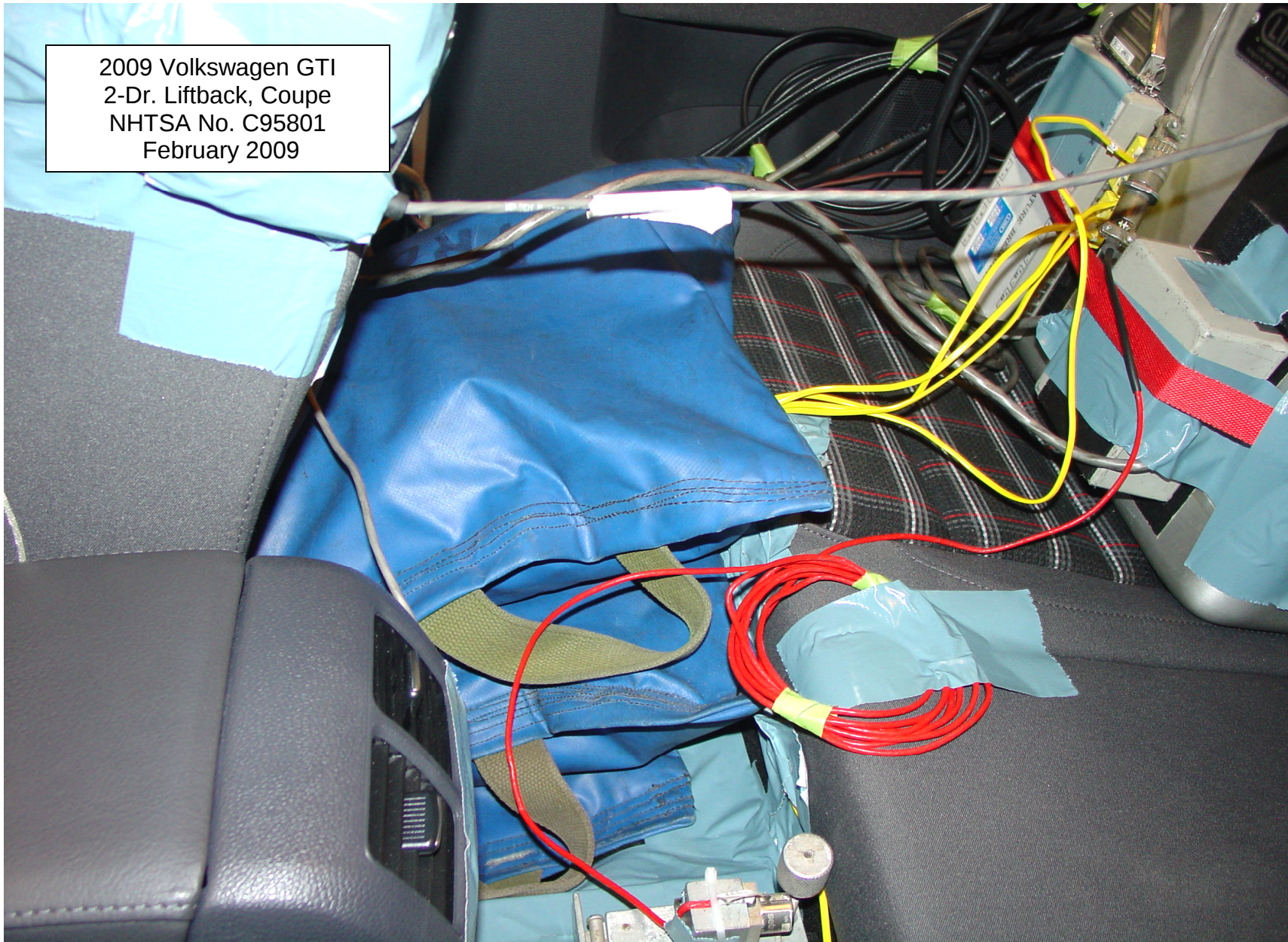
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Ballast in Vehicle

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Ballast in Vehicle

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
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Ballast in Vehicle

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February 2009



Ballast in Vehicle

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Brake System Indicator (Warning) and ABS Warning Lamps

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2-Dr. Liftback, Coupe
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February 2009



Brake Lining Wear Indicator (Warning) Display

2009 Volkswagen GTI
2-Dr. Liftback, Coupe
NHTSA No. C95801
February 2009

REIN DOT4
D'UN BIDON

WARNING: CLEAN
FILLER CAP BEFORE
REMOVING USE ONLY
DOT4 FLUID FROM
A SEALED CONTAINER

5

Brake Fluid (Master Cylinder) Reservoir Warning Label

7.0 INSTRUMENT CALIBRATION (12 MONTH MAXIMUM INTERVAL)

VEHICLE: 2009 Volkswagen GTI ; NHTSA NO.: C95801; DATE: 12/22/08

INSTRUMENT	SERIAL NUMBER	CALIBRATION DATE	NEXT CALIBRATION
Data Acquisition System - Link DAS 2082	980382	06/11/08	06/11/09
Computer – Dell/Link Engrg.	TRC-43207	Not Applicable	Not Applicable
Software - Link Engrg. Rev Data	TRC Propr.	NA	NA
LF Torque Wheel	Not Utilized		
RF Torque Wheel	Not Utilized		
LR Torque Wheel	Not Utilized		
RR Torque Wheel	Not Utilized		
Stopwatch – Fisher Scientific (Heating Snubs)	SN-97216633	08/27/08	08/27/09
Stopwatch – Accusplit (Daily Cals)	SW 41363960	08/27/08	08/27/09
Tire Pressure Gauge – WIKA	AG-101 97216633	11/05/08	02/05/09
Pedal Force Transducer – Sensor Devel.	169755	Each Test	Each Test
Asst. Pipe-Handle Steel Weights - Ohaus	LB-0001	06/04/08	06/04/09
Park Brake Force Transducer – Interface	LC-41721	Each Test	Each Test
LF Hydraulic Pressure Transducer	Not Utilized		
RF Hydraulic Pressure Transducer	Not Utilized		
LR Hydraulic Pressure Transducer	Not Utilized		
RR Hydraulic Pressure Transducer	Not Utilized		
Accelerometer - Setra (+ or – 15 g) 141A	A-1055763	Each Test	Each Test
Fifth Wheel – ADAT DSR6/1aa Radar	07030215461	Each Test	Each Test
Wind Velocity/Direct. – Davis Model 6410	050608N22	07/13/08	07/13/09
Ambient Temp. Gage–Davis Mod. 6150	050608N02	07/13/08	07/13/09
LF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RF Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
LR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
RR Brake Thermocouple - Temprel/Link	T52-0B-24K	Ea. Test w/Link	Ea. Test w/Link
Lock-up Detection System	TRC Propr.	Each Test	Each Test
Vehicle Weight – Toledo/Mettler Scales JAGXTREME 3000000, (Bldg. 70)	SN 5225831-5JC	11/18/08	02/18/09

QUALITY ASSURANCE

DAILY CALIBRATIONS (1 of 3)

Vehicle: 2009 Volkswagen GTI

NHTSA No.: C95801

Deceleration Calibration Data for Unit 9353

Desired full scale value is: 9.81 m/s/s

Allowed deviation is: + or - 0.15 m/s/s

Accelerometer Level to zero, then tilt to
full scale

"Date"	"Time"	Zero	Cal
"stp"	"stp"	"Decel"	"Decel"
12/23/2008	11:27:44	-0.05	9.76
2/2/2009	10:41:42	0.01	9.83
2/3/2009	9:33:43	0.05	9.81
2/3/2009	15:27:04	0.07	9.79
2/4/2009	8:41:52	0.00	9.80
2/4/2009	15:41:13	0.00	9.81
2/5/2009	9:15:13	0.03	9.83
2/5/2009	15:13:33	0.00	9.82
2/9/2009	9:26:13	0.06	9.81
2/10/2009	10:17:23	0.00	9.84
2/12/2009	8:25:27	0.00	9.79
2/13/2009	10:01:54	-0.01	9.79

PRE TEST CAL.

POST TEST CAL.

Pre-Test Linearity Check 12/23/2008

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Post-Test Linearity Check 02/13/2009

Actual (m/s/s)	Rec. (m/s/s)
0.0	0.0
3.0	3.0
6.1	6.1
9.8	9.8

Distance Calibration Data for Unit 9353

Desired full scale value is: 1000 m

Allowed deviation is: 3 m

Light beam Drive from 0 to 100 to 0 km/h
distance sensor on a measured kilometer

"Date"	"Time"	Distance for
"stp"	"stp"	1000 meters
2/2/2009	10:56:19	1000.3
2/3/2009	9:37:47	999.5
2/3/2009	15:30:48	999.2
2/4/2009	8:46:42	999.5
2/4/2009	15:44:37	1000.4
2/5/2009	9:19:57	1001.0
2/5/2009	15:16:34	1000.8
2/9/2009	9:29:58	1000.2
2/12/2009	8:33:22	1000.1
2/13/2009	8:44:53	1000.1

PRE TEST CAL.

POST TEST CAL.

DAILY CALIBRATIONS CONTINUED (2 of 3)

Vehicle: 2009 Volkswagen GTI

NHTSA No.: C95801

Wheel Tachometer Calibrations for Unit 9353

Wheel tachometer calibrations: all wheel speeds should be 15 km/h

		"Date"	"Time"	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h	Zero	@15km/h	
		stp	stp	LF	LF	RF	RF	LR	LR	RR	RR	
Wheel Lock Detector	While at a standstill, check zeros. Drive vehicle at approx. 15 km/h and engage zero speed switch for each wheel	2/5/2009	9:24:38	0.0	15.9	0.0	16.7	0.0	15.8	0.0	15.4	PRE TEST CAL.
		2/5/2009	15:18:15	0.0	15.5	0.0	16.4	0.0	15.6	0.0	15.2	
		2/9/2009	9:32:54	0.0	15.9	0.0	17.2	0.0	15.8	0.0	15.5	
		2/12/2009	8:35:51	0.0	16.6	0.0	16.6	0.0	16.0	0.0	15.6	POST TEST CAL.
		2/12/2009	8:36:51	11.5	17.2	13.2	16.9	0.0	15.4	13.9	15.1	
		2/13/2009	8:47:23	0.0	15.7	0.0	16.4	0.0	15.5	0.0	15.2	

When driven over 15 km/hr and the wheel tack generators are shunted to zero volts, does the graphical screen indicate wheel lock at position?: X Yes, No.

Pedal Force Meter Calibration for Unit 9353

Target shunt calibration is 388 N

Desired recorded value is: 388 N

Desired recorded actual force calibration check value is: 500 N

Allowed deviation is: 6.5 N

		"Date"	"Time"	Zero	Cal Val	
		stp	stp	Force	Force lb	
Service brk. pedal effort	Driver engages a fixed shunt cal switch.	12/23/2008	11:42:12	-0.4	498.6	PRE TEST CAL.
		2/2/2009	10:39:32	-0.3	388.6	
		2/3/2009	9:32:37	-0.3	388.7	
		2/3/2009	15:25:54	-0.3	388.7	POST TEST CAL.
		2/4/2009	8:38:17	-0.3	388.6	
		2/4/2009	15:40:18	-0.6	388.2	
		2/5/2009	9:14:10	-0.2	388.6	
		2/5/2009	15:12:51	-0.3	388.3	
		2/9/2009	9:25:24	-0.4	388.4	
		2/10/2009	10:16:46	-0.1	388.7	
		2/12/2009	8:24:38	-0.2	388.3	
		2/13/2009	12:05:08	0.1	496.2	

Pre-Test Linearity Check - 12/23/08

Actual	Recorded
Force (N)	Force (N)
0	0
222	222
445	445
498	498

Post-Test Linearity Check - 02/13/09

Actual	Recrdd
Force (N)	Frc(N)
0	0
222	221
445	444
498	497

Parking Brake Transducer Cal - Pre & Post-Test: Shunt Cal - 331N - 02/12/09

Actual	Recorded
Force (N)	Force (N)
0	0
222	222
445	445

DAILY CALIBRATIONS CONTINUED (3 of 3)

Vehicle: 2009 Vlokswagen GTI

NHTSA No.: C95801

Dynamic Speed Calibration for Unit 9353

Desired speed value is: 100 km/h

Allowed deviation is: 1.6 km/h

Desired time value is: 36 seconds

Allowed deviation is: + or - 0.6 seconds

Light beam Drive vehicle
speed sensor at a steady
100 km/h
through a
kilometer.

"Date"	"Time"	"Speed"	Time"
stp	stp	km/h	sec
2/2/2009	11:07:50	99.9	36.00
2/3/2009	9:34:56	100.6	35.87
2/3/2009	15:28:19	100.3	36.02
2/4/2009	8:44:01	100.4	36.14
2/4/2009	15:42:35	100.4	36.16
2/5/2009	9:16:51	100.3	36.09
2/5/2009	15:14:30	100.5	36.02
2/9/2009	9:27:53	100.5	36.24
2/12/2009	8:27:07	100.1	36.21
2/13/2009	8:36:02	100.4	36.13

POST TEST CAL

APPENDIX A

Copy of Manufacturer's Sticker

2009 GTI

Exterior: Tornado Red Exterior

Interior: Anthracite Interior

STANDARD FEATURES (unless replaced by options)

- PERFORMANCE/HANDLING**
- 2.0L turbocharged, 200 hp engine, 207 lbs.-ft. torque
 - In-line 4 cylinder direct injection engine
 - Electro-mechanical power steering
 - Independent strut front suspension
 - Multilink independent rear suspension
 - Electronic Stabilization Program (ESP)
 - Anti-Slip Regulation (ASR)
 - Electronic Differential Lock (EDL)
 - Electronic Brake Force Distribution (EBD)
 - Anti-lock Brake System (ABS)
 - 225/45R17 all-season tires w/ 17" alloy wheels
- SAFETY/DURABILITY**
- Driver and front passenger side airbag supplemental restraint system
 - Driver and front passenger side airbag supplemental restraint system
 - Side Curtain Protection™ head airbags, front and rear
 - 3-point safety belts, all seating positions
 - Lower Anchors and Tethers for Children (LATCH)
 - Daytime running lights
 - Side protection for all seating positions
 - Side protection for front and rear
 - Front and rear power assisted disc brakes
 - Tire Pressure Monitoring System (TPMS)

- COMFORT/CONVENIENCE**
- CLIMATIC™ single-zone air-conditioning, CFC-free
 - Power, heatable exterior mirrors
 - Adjustable intermittent front wipers/washer system
 - Front center armrest with storage
 - Cruise control
 - 6-speaker stereo, multifunction steering wheel
 - Multifunction trip computer & compass
 - Alloy appearance interior trim treatment, including pedals
 - Adjustable height and lumbar for front seats
 - 60/40 split folding rear seat
 - Height adjustable, telescoping steering column
 - Sirius® Satellite Radio w/6 month complimentary subscription
 - Remote keyless locking system
 - Anti-theft alarm with immobilizer and theft deterrent system
 - Front and rear carpeted floor mats
 - In-dash, 6 disc CD changer with MP3 format capability
 - Red painted brake calipers
 - Xenon headlights w/ front fog lamps

Destination Charge

\$650.00

Total Price: \$23,640.00

Fuel, license, title fees, taxes and dealer-installed accessories are not included

Manufacturer's Suggested Retail Price:

\$22,990.00

DRIVER CARE PACKAGE

- WARRANTY INFORMATION**
- Volkswagen New Vehicle Limited Warranty
 - 3 years/36,000 miles (whichever occurs first)
 - Powertrain Limited Warranty
 - 5 years/60,000 miles (whichever occurs first)
 - Limited Warranty against Corrosion Perforation
 - 12 year/unlimited miles
- Please ask your dealer for a copy of the Volkswagen warranty booklet for details.
- 24-HOUR ROADSIDE ASSISTANCE**
- 3 years/36,000 miles (whichever occurs first)
 - (Towing coverage for warranty-related failures and battery jump starts)
 - Provided by a third party supplier

- VOLKSWAGEN CAREFREE MAINTENANCE**
- Scheduled maintenance activities described in the Volkswagen Maintenance booklets are covered at no charge for 3 years / 36,000 miles (whichever occurs first)

PACKAGES/OPTIONS

- Tornado red exterior
- Anthracite interior
- 6-speed manual transmission

No Charge
No Charge
No Charge

The original European hot hatch returns.

EPA Fuel Economy Estimates

These estimates reflect new EPA methods beginning with 2008 models.

CITY MPG

21

Expected range for most drivers
at \$4.30 per gallon
17 to 25 MPG

HIGHWAY MPG

31

Expected range for most drivers
25 to 37 MPG

Estimated Annual Fuel Cost

\$2,580

based on 15,000 miles
at \$4.30 per gallon

Combined Fuel Economy

This Vehicle

25

11 **>** 42
All Compact Cars

Your actual mileage will vary depending on how you drive and maintain your vehicle.



See the FREE Fuel Economy Guide at dealers or www.fueleconomy.gov

Volkswagen of America, Inc.

SOLD TO: 403195
BILL MARINE AUTO CENTER, INC.
415 E NORTH ST
SPRINGFIELD, OH 45503

SHIP TO: 403195
BILL MARINE AUTO CENTER, INC.
415 E NORTH ST
SPRINGFIELD, OH 45503

VIN: WWWEV71K29W105150
Port of Entry: DAVISVILLE
Transportation Method: UNKNOWN
COMM NUM: 492274

GOVERNMENT SAFETY RATINGS

Frontal Crash Driver Not Rated
Passenger Not Rated

Star ratings based on the risk of injury in a frontal impact. Frontal ratings should ONLY be compared to other vehicles of similar size and weight.

Side Crash Front Seat Not Rated
Rear Seat Not Rated

Star ratings based on the risk of injury in a side impact.

Rollover Not Rated

Star ratings based on the risk of rollover in a single vehicle crash.

Star ratings range from 1 to 5 stars (★ ★ ★ ★ ★) with 5 being the highest.
Source: National Highway Traffic Safety Administration (NHTSA).

www.safercar.gov or 1-888-327-4236

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PARTS CONTENT INFORMATION

FOR VEHICLES IN THIS CARLINE: FOR THIS VEHICLE:
U.S./CANADIAN FINAL ASSEMBLY POINT:
PARTS CONTENT: 1% WOLFSBURG, GERMANY
MAJOR SOURCES OF FOREIGN COUNTRY OF ORIGIN:
PARTS CONTENT: ENGINE: HUNGARY
GERMANY: 75% TRANSMISSION: GERMANY

NOTE: PARTS CONTENT DOES NOT INCLUDE FINAL ASSEMBLY, DISTRIBUTION OR OTHER NON-PARTS COSTS.

APPENDIX B

Discussion on Data

DISCUSSION ON DATA

Symbols for Brake Components

4	-	4 Wheel	G	-	Groan	DL	-	Deceleration (State FPSPS)
X	-	Skid	SQ	-	Squeal	PF	-	Pedal on Floor
L	-	Left	SQK	-	Squeak	SCP	-	Shoe Scrape
R	-	Right	PO	-	Pinchout	RB	-	Rubber Banding
R	-	Rear	P	-	Pull	O	-	Odor
F	-	Front	R	-	Shudder	NOX	-	No Skid
B	-	Both	M	-	Momentary			

INT or INIT	-	Initial Part of Stop
MID	-	Middle of Stop
END	-	End of Stop

All stops were made manually.

APPENDIX C

Contractor's Comments
Procedure Modifications
and
Test Facility

Comments for vehicle C95801.

For all recorded decelerations:

The recorded *average* deceleration values for the tests are slightly lower than that which is required or targeted for certain test sections. However, in all cases and in reality, the driver maintained the correct required/target deceleration values for the majority of time for each of those stops. The recorded deceleration is acquired from the moment the service brake pedal is moved until the vehicle reaches zero speed. Therefore, the time needed to achieve the target deceleration (rise time) and the time the vehicle goes from the target deceleration to zero (fall time) is included in the average deceleration calculation. The rise and fall times were added to the entire length of the stops. Hence, the recorded average deceleration values were generally and slightly less than the required/target deceleration values.

During the test set-up, the technician's tried several different fuses to produce the ABS Failure Mode. This was done, because the vehicle's owners manual and manufacturer's provided schematics did not match the test vehicle's power distribution box layout. The ABS warning lamp did indeed light; however, reinstallation of the fuses did not extinguish it. TRC Inc. technicians attempted repeated ignition key on and off scenarios, disconnection of the negative battery cable and use of a scan tool to reset the ABS lamp to no avail. Additionally, the speedometer and odometer ceased functioning while the ABS lamp was activated.

The NHTSA/OVSC Standards Engineer was contacted, who in turn, contacted the manufacturer. It was indicated the only way to reset the ABS lamp was to transport the vehicle to an authorized Volkswagen dealer. On January 8, 2009, the vehicle was driven to Midwestern Auto Group (MAG) in Dublin, Ohio. Technicians at MAG reset the ABS warning lamp and also discovered some missing fuses within the power distribution box and replaced them. The technician also provided a correct schematic for the power distribution box.

For S7.8, Antilock Functional Failure @ LLVW, the driver removed two 30A fuses to simulate the failure. During the test stops, the ABS lamp, a flashing BRAKE lamp, a yellow power steering lamp, a yellow EPC lamp, and traction control lamp were all activated and after the last/sixth stop, the check engine lamp activated. After the test was completed, the 30A fuses were reinstalled and all lamps, EXCEPT the check engine lamp extinguished.

The Standard's Engineer was again notified and on February 2, 2009, and the vehicle was again driven to MAG where technicians used a scan tool to extinguish the check engine lamp.

The Hydraulic Circuit Failure Tests were performed not to the lab procedure sequence to both save time and cause minimal disruption to the hydraulic brake system. Sequence: Circuit #1 @ LLVW; Circuit #1 @ GVWR: Circuit #2 @ GVWR and Circuit #1 @ LLVW.

For S7.8, Antilock Functional Failure @ GVWR, the same fuses were removed and the same warning lamps alighted. However, after this test, the fuses were reinstalled and ALL warning lamps were extinguished.

For S7.14 Hot Performance @ GVWR, stop number two, the driver momentarily exceeded the 500N maximum pedal force by 56N. Given the margin with which that stop complied, it is believed that the stop still would have complied had the pedal effort not exceeded 500N.

Due to the number of ancillary engine components surrounding the master cylinder and the necessity of removing those components to remove the master cylinder from the vehicle, it was decided not to remove the master cylinder for bore measurement. For identification, the markings embossed under the master cylinder are: "68" within a circle, 22, "1/7" within a circle, and 7.18. Engraved on the end of the master cylinder are: "2288M" and "812".

7.5-MILE TEST TRACK

The 7.5-mile test track encloses a 1,600-acre area, one mile wide and 3.5 miles long.

The track has a downward grade, north to south, of 0.228 percent and a cross slope in the straightaways of 3/16 inch per foot. The 1.88 mile long straightaways flow into transition areas 2,300 feet in length and then into 5,275-foot long curves with a constant radius of 2,400 feet. The 36-foot wide straightaways and the 42-foot wide curves provide three test lanes. Paved berms, 12 feet in width, border the straightaways and the inside of the curves.

As a vehicle moves toward the outside of the track in the curves, it encounters a progressively steeper bank. The inside lane (or "slow" lane) has a bank of 10 degrees allowing a neutral speed of 80 mph with no side forces. In the center lane, the slope increases to 19 degrees resulting in a neutral speed of 110 mph. The outside lane's 28-degree bank allows a 140 mph neutral speed. Rimming the outer lane is a seven-foot safety lane culminating in a 36-degree slope at the guardrail.

The facility is paved with Portland cement concrete. It carries a maximum single axle load of 36,000 pounds and a maximum tandem axle load weight of 48,000 pounds. Special provisions can be made for heavier weight loads.

With 22.5 lane miles, our track will accommodate many vehicles simultaneously. Research which utilizes the track includes component performance and durability studies, brake tests, aerodynamic studies, fuel economy studies, drive line efficiency tests, and the determination of vehicular acceleration and cruise characteristics. In addition, it supports maximum speed determination, road load power, noise and emission measurements and tire durability test programs.

The 7.5-mile test track can be used in conjunction with other facilities at TRC. It provides an excellent area for pre-test conditioning of equipment such as brake burnishing, tire break-in, and vehicle warm-up.

TRC SKID PAD

The Skid Pad is a test facility which is utilized primarily for the evaluation of tire and brake systems.

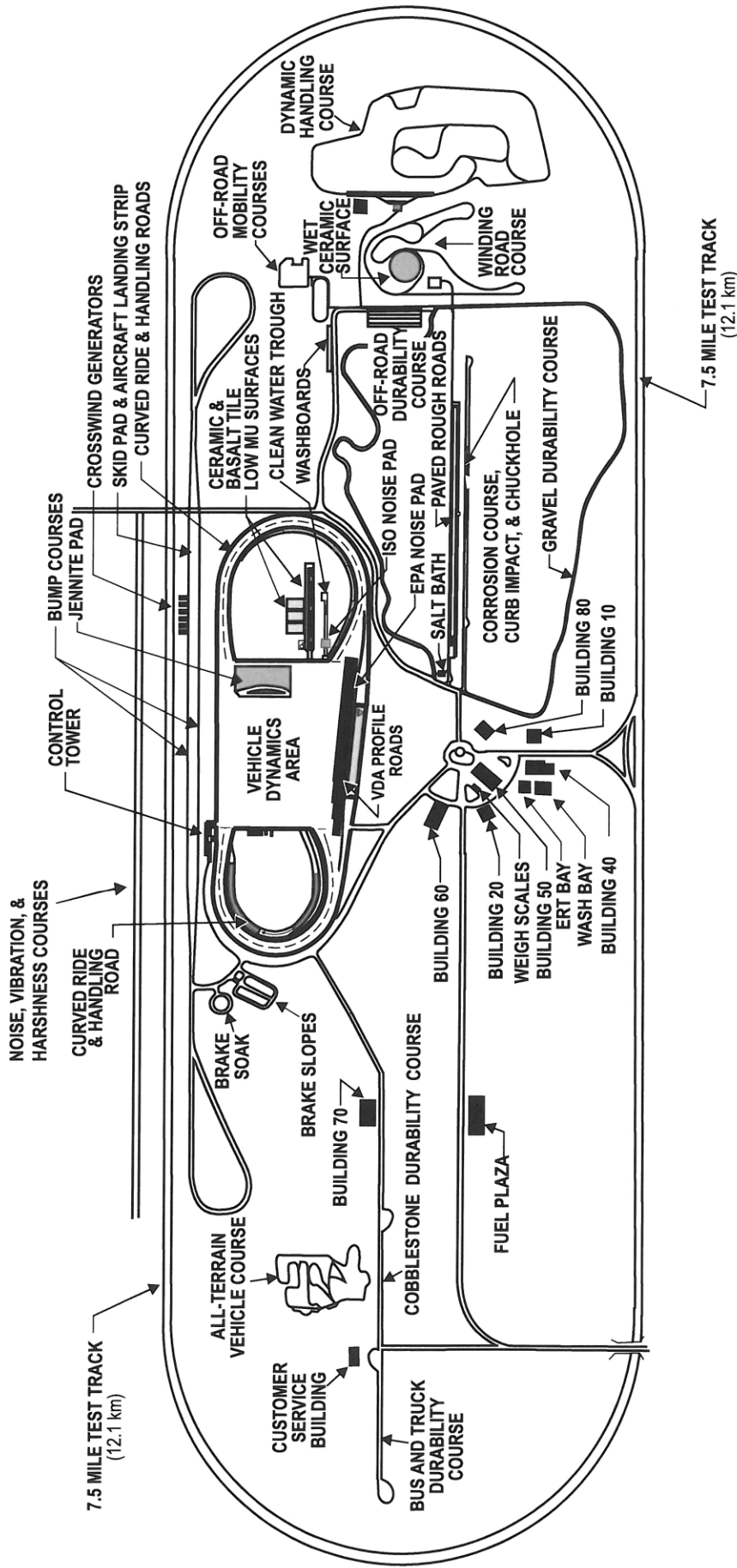
The overall dimensions of the pad are 9,000 feet by 84 feet with loops on the north and south ends. Both turnaround loops have a 309-foot radius and are 16 feet wide with a 25 percent super elevation. They will accommodate speeds of 45 mph with zero side force and 60 mph with .5 g's lateral acceleration. The acceleration/deceleration lanes at each end are 3,280 feet in length.

A test area of 210,000 square feet is situated in the center of the skid pad containing several test pads with varying surface textures. Skid numbers in this area range from 30 (wet) to 80 (dry).

The skid pad is paved with Portland cement. The load capacity of the skid pad is 36,000 pounds maximum single axle weight and 48,000 pounds maximum tandem axle weight.

Varying surface textures in the main test area are ideal for testing tire and/or brake system performance on different surfaces as characterized by "skid numbers." The skid pad is also used for acceleration studies, aerodynamics, rolling resistance, noise testing, and vehicle top speed determination.

The subject test vehicle was rear wheel anti lock equipped. Rather than rapidly and fully applying the service brake control, the driver modulated the service brake control as necessary to control/prevent front wheel lock.



Not to Scale

TEST FACILITY DETAIL

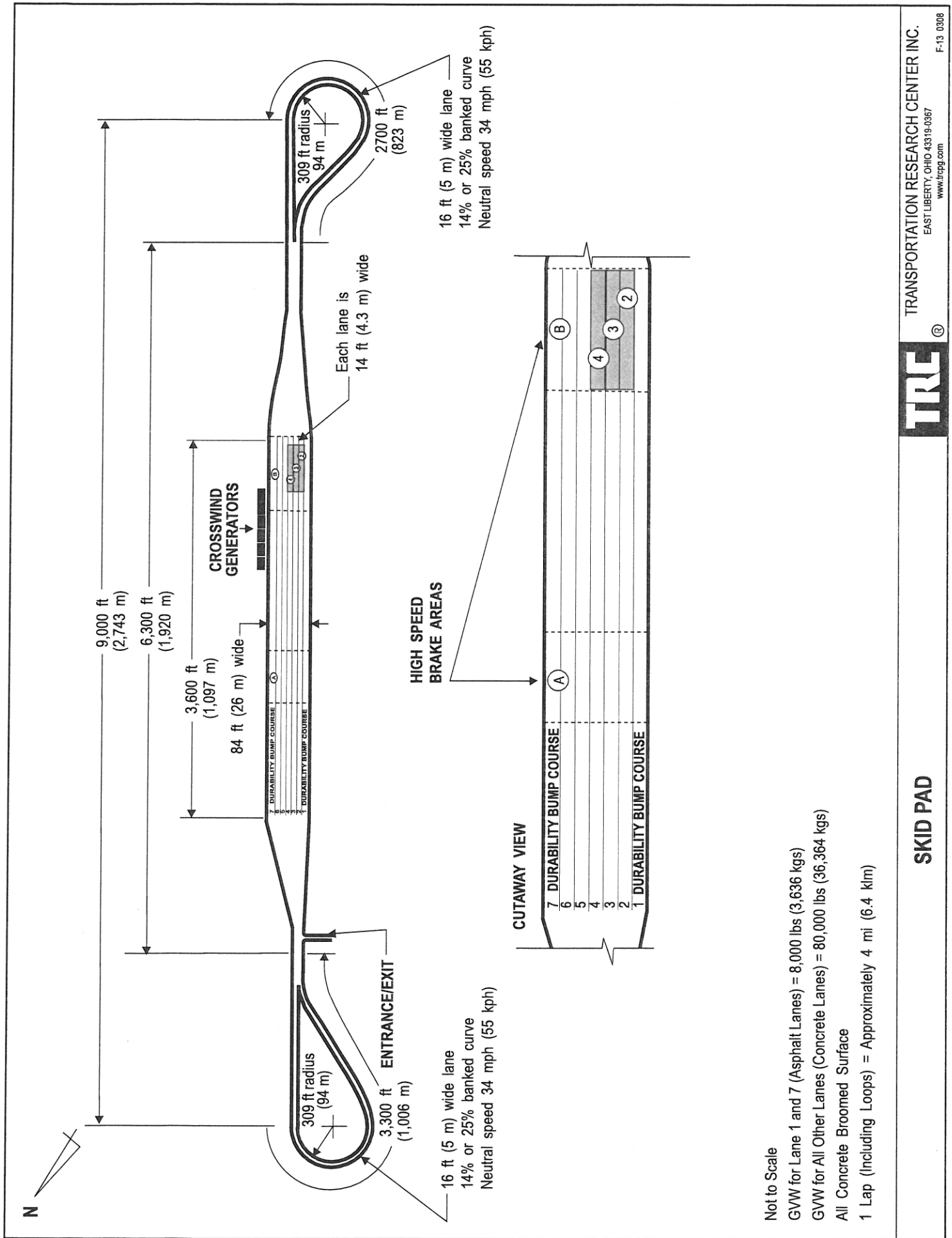


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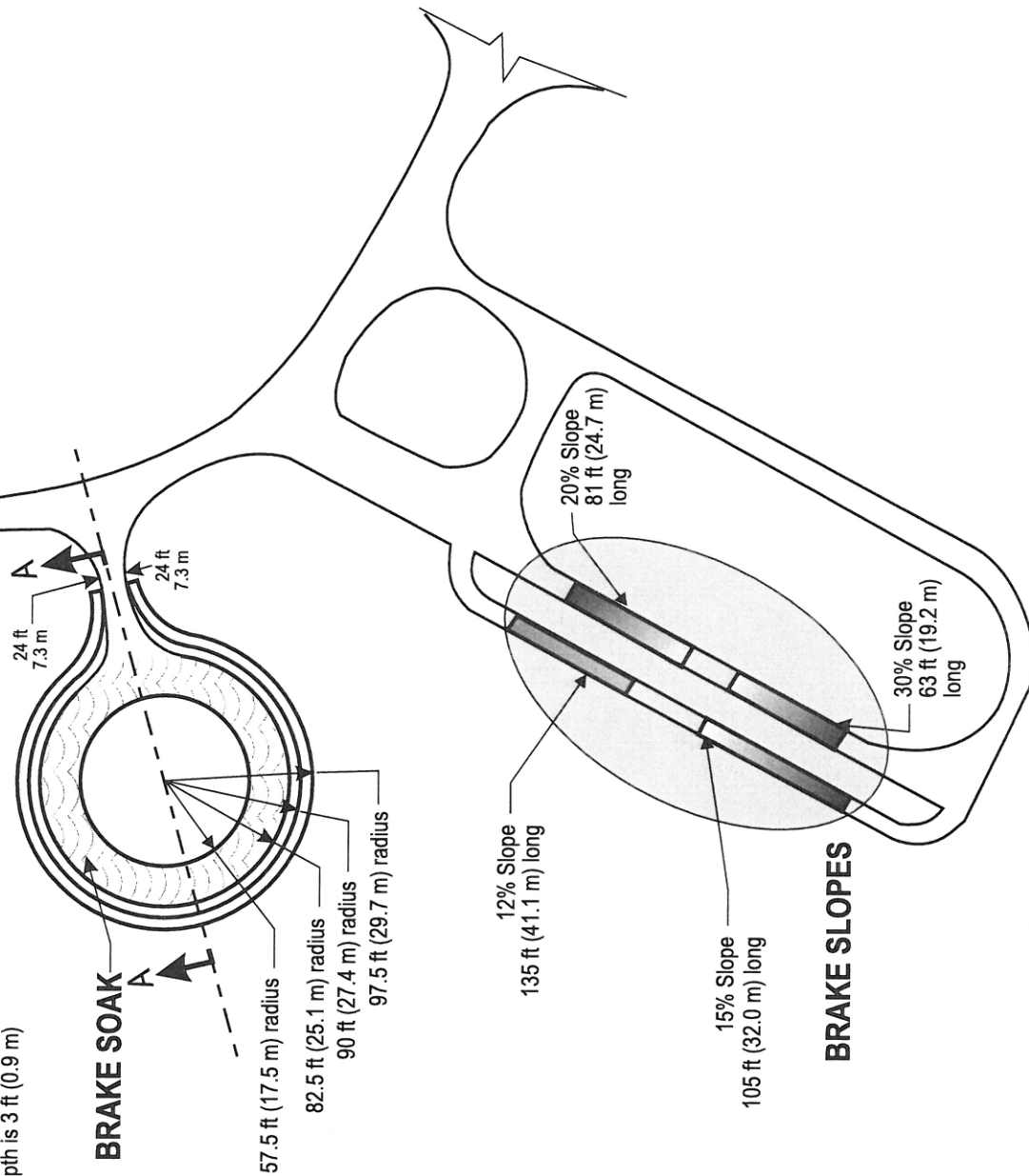
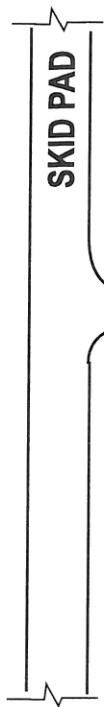
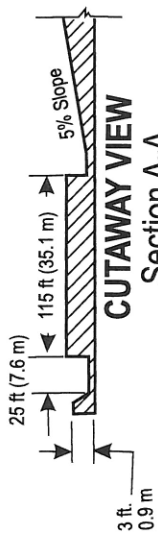
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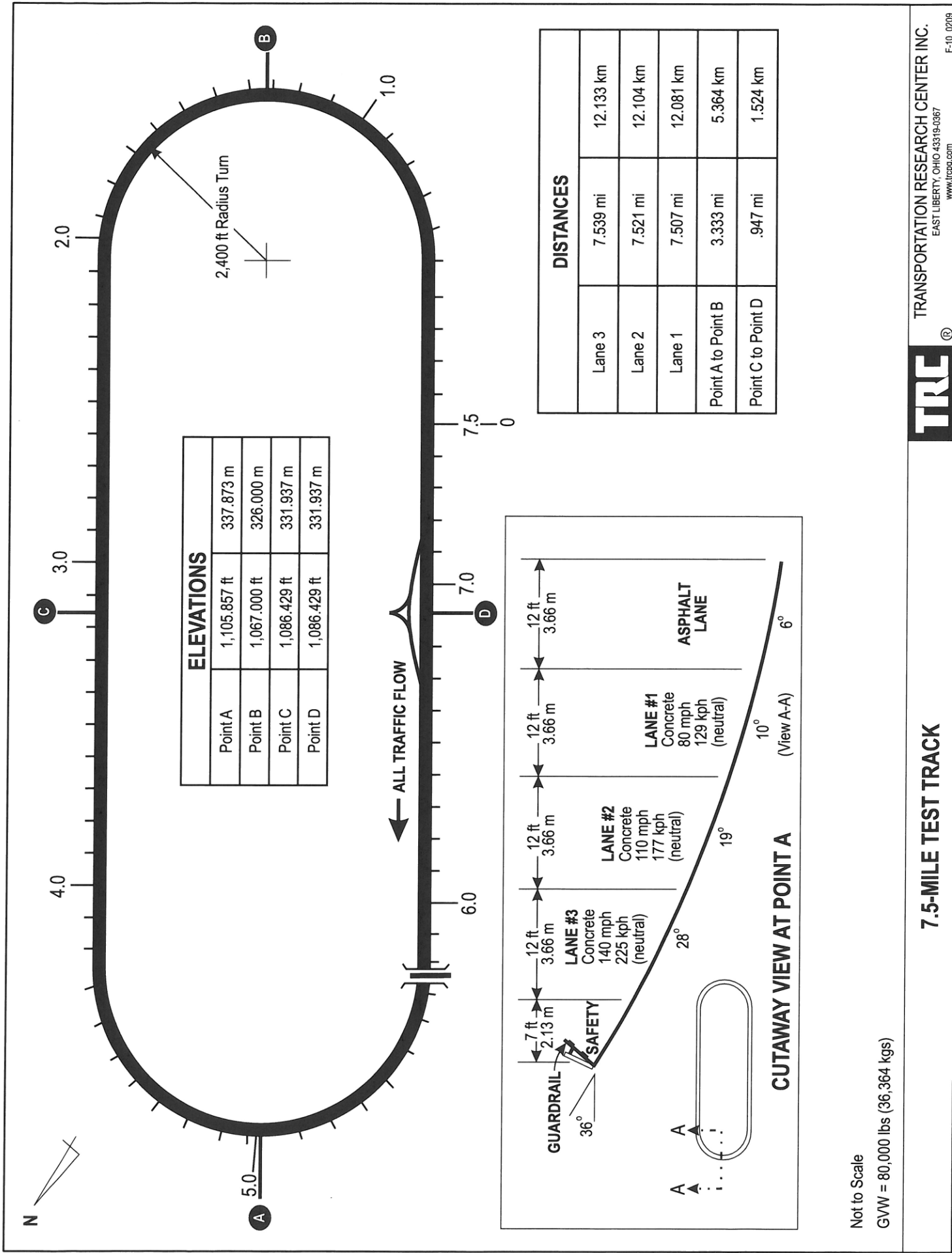
Not to Scale
 GVW for Brake Soak = 36,000 lbs (16,364 kgs)
 GVW for 12 & 15% Slopes = 8,000 lbs (3,636 kgs)
 GVW for 20 & 30% Slopes = 80,000 lbs (36,364 kgs)

BRAKE SOAK & BRAKE SLOPES



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APPENDIX D
Notice of Possible Non-Compliance

This vehicle (C95801) met the requirements of the FMVSS 135 Standard.